

Supplemental Materials and Methods

Experimental bone metastasis assay

Primary PCa cells were sorted by GFP marker from mTmG⁺ tumors, and 10⁵ cells in 20µL PBS were injected using Hamilton syringe into the tibia of 6-week old NSG mice. Mice were monitored biweekly for moribund signs for euthanasia and organ harvest.

Noninvasive mouse and ex vivo imaging

MRI imaging with Bruker ICON and fluorescence imaging of fresh organs with metastasis enumeration were recently described (Lu et al. 2017).

Primary prostate cell sphere formation assay

Isolate of primary cells from prostate, culture and counting of prostatespheres on Matrigel were performed as described (Lukacs et al. 2010). For organoid culture assay, we followed a published matrigel embedding method (Chua et al. 2014).

RNA-Seq and differential gene expression

Total RNA was isolated from prostate tumors using Direct-zol RNA MiniPrep Kit (Zymo Research) and processed for stranded total RNA-Seq using Illumina HiSeq 4000 at Sequencing and Microarray Facility at MD Anderson Cancer Center. The differential expression analysis was performed using the DESeq2 package of R. P-values obtained after multiple binomial tests were adjusted using BH method. Significant genes are defined by using a cut-off of 0.05 on the BH corrected p-value and an absolute log2 fold change value of at least 1.5.

Histology and western blot

H&E stain, immunohistochemical (IHC) and western blot were performed as previously described (Ding et al. 2011; Wang et al. 2016). Primary antibodies for IHC include Ki67 (Fisher, RM-9106-S1), cleaved caspase 3 (Cell Signaling Technology aka CST, 9661), cyclin D1 (Fisher, clone SP4), TGFBR2 (Abcam, ab61213), BMPR2 (Abcam, ab130206), AR (EMD Millipore, 06-680), phospho-Akt (CST, 4060), GFP (CST, 2956), E-Cadherin (CST, 14472). Primary antibodies for western blot include phospho-p38 MAPK (CST, 4511), total p38 (CST 9212), phospho-Bim (CST, 4585), total Bim (CST, 2933), phospho-MKK3/MKK6 (CST, 12280), BMP6 (R&D Systems, AF6325), BMP7 (CST, 4693).

Quantitative RT-PCR

RNA was isolated by RNeasy Kit (Qiagen) and reversed transcribed using Superscript III cDNA synthesis Kit (Life Technology). Quantitative PCR was performed using SYBR-GreenER Kit (Life Technology). Primers are listed in Supplemental Table S5.

Statistical Analysis

Data were presented as mean \pm s.d. Student's t-test assuming two-tailed distributions was used to calculate statistical significance between groups. Animal survival benefit was determined by Kaplan-Meier analysis. $P<0.05$ was considered statistically significant.

Supplemental Figure Legends

Supplemental Figure S1. Prostate-specific deletion of *Tgfbr2* or *Bmpr2* does not provoke prostate neoplasia. (A) H&E-stained sections of AP, DLP, and VP in *PB-Cre*⁺, *PB-Cre*⁺ *Tgfbr2*^{L/L}, *PB-Cre*⁺ *Bmpr2*^{L/L} mice at 9 months of age show normal prostate morphology. Scale bar 200μm. (B-C) Immunohistochemical (IHC) staining of TGFBR2 or BMPR2 in the AP and DLP of mice with indicated genotypes. Scale bar 100μm.

Supplemental Figure S2. Characterization of AR and phospho-AKT levels in prostate cancer models. (A) IHC staining of AR in the AP and DLP of mice with indicated genotypes. Scale bar 50μm. (B) IHC staining of phospho-AKT in the AP and DLP of mice with indicated genotypes. Scale bar 50μm. (C) Western blot of phospho-AKT and total AKT in the AP and DLP of mice with genotypes 1 (wild type *PB-Cre*⁻), 2 (*PB-Cre*⁺ *Pten*^{L/L}), 3 (*PB-Cre*⁺ *Pten*^{L/L} *Bmpr2*^{L/L}), 4 (*PB-Cre*⁺ *Pten*^{L/L} *Smad4*^{L/L}), 5 (*PB-Cre*⁺ *Pten*^{L/L} *Tgfbr2*^{L/L}).

Supplemental Figure S3. Metastatic dissemination of PCa cells to lung in *PB-Cre*⁺ *Pten*^{L/L} *Tgfbr2*^{L/L} and *PB-Cre*⁺ *Pten*^{L/L} *Smad4*^{L/L} models. (A) Disseminated PCa cells to draining lymph nodes and lung in 6 week old *PB-Cre*⁺ *Pten*^{L/L} *Tgfbr2*^{L/L} *mTmG*^{L/+} mice. Scale bar: prostate 5mm; lymph node 1mm; lung 2mm. (B) IHC staining of GFP, E-Cadherin, AR and phospho-AKT of lung with metastases for mice with indicated genotypes. Scale bar 50μm. (C) PCR-based *Pten* genotyping to detect *Pten*^{Δexon5} band from microdissected lung metastases nodules (GFP+) or adjacent normal lung tissue. (D) Western blot of phospho-JNK and phospho-ERK for prostate tumors from 10-week old mice with indicated

genotype. The sample set was the same as the AP sample set used in Figure 2C. Therefore, the same beta-actin loading control is shown here. **(E)** Semi-quantitative result of western blot in Fig. 2D.

Supplemental Figure S4. Pattern of dissemination of PCa cells to bone. (A)

Detection of solitary GFP⁺ PCa cells among the pooled femur and tibia bone marrow cells (toTomato⁺) isolated from mice of indicated genotype and age. **(B-C)** PCR-based *Pten* genotyping to detect DTCs from the pooled bone marrow cells, with both summary and gel image shown. *Pten*^{Δexon5} band implies presence of DTCs because Cre recombination only occurs in primary PCa cells. ND: not determined. **(D)** Quantification of tibia metastasis area and X-radiograph intensity for images in Fig. 3C. Data represent mean ± s.d. * *P* < 0.05, Student's t-test.

Supplemental Figure S5. Characterization of Pten vs. Pten Bmpr2 tumors.

(A) IHC staining of Ki67 and cleaved caspase 3 (CC3) in tumors from 3.5-month old *PB-Cre*⁺ *Pten*^{+/L} and *PB-Cre*⁺ *Pten*^{+/L} *Bmpr2*^{L/L} mice. Scale bar 50μm. **(B)** Quantification of the Ki67 and CC3 IHC staining (N=3). Data represent mean ± s.d. ** *P* < 0.01, # *P* > 0.05, Student's t-test. **(C)** Sphere formation assay using primary tumor cells isolated from *PB-Cre*⁺ *Pten*^{+/L} *Bmpr2*^{L/L} prostate and treated with BMP6 (N=5). Data represent mean ± s.d. # *P* > 0.05, Student's t-test. **(D)** Organoid assay using primary tumor cells isolated from *PB-Cre*⁺ *Pten*^{+/L} prostate and treated with BMP6 or TGFβ1 (N=3). Data represent mean ± s.d. * *P* < 0.05, ** *P* < 0.01, Student's t-test. **(E)** Top canonical pathways enriched by differentially expressed genes between *PB-Cre*⁺ *Pten*^{+/L} and *PB-Cre*⁺ *Pten*^{+/L} *Bmpr2*^{L/L} tumors (*P* < 0.01).

Supplemental Tables

Supplemental Table S1. List of statistically significantly differentially expressed genes in prostate tumors from 6-month old *PB-Cre⁺ Pten^{L/L}* and *PB-Cre⁺ Pten^{L/L} Bmpr2^{L/L}* mice, with transcriptome profiled using RNA-seq.

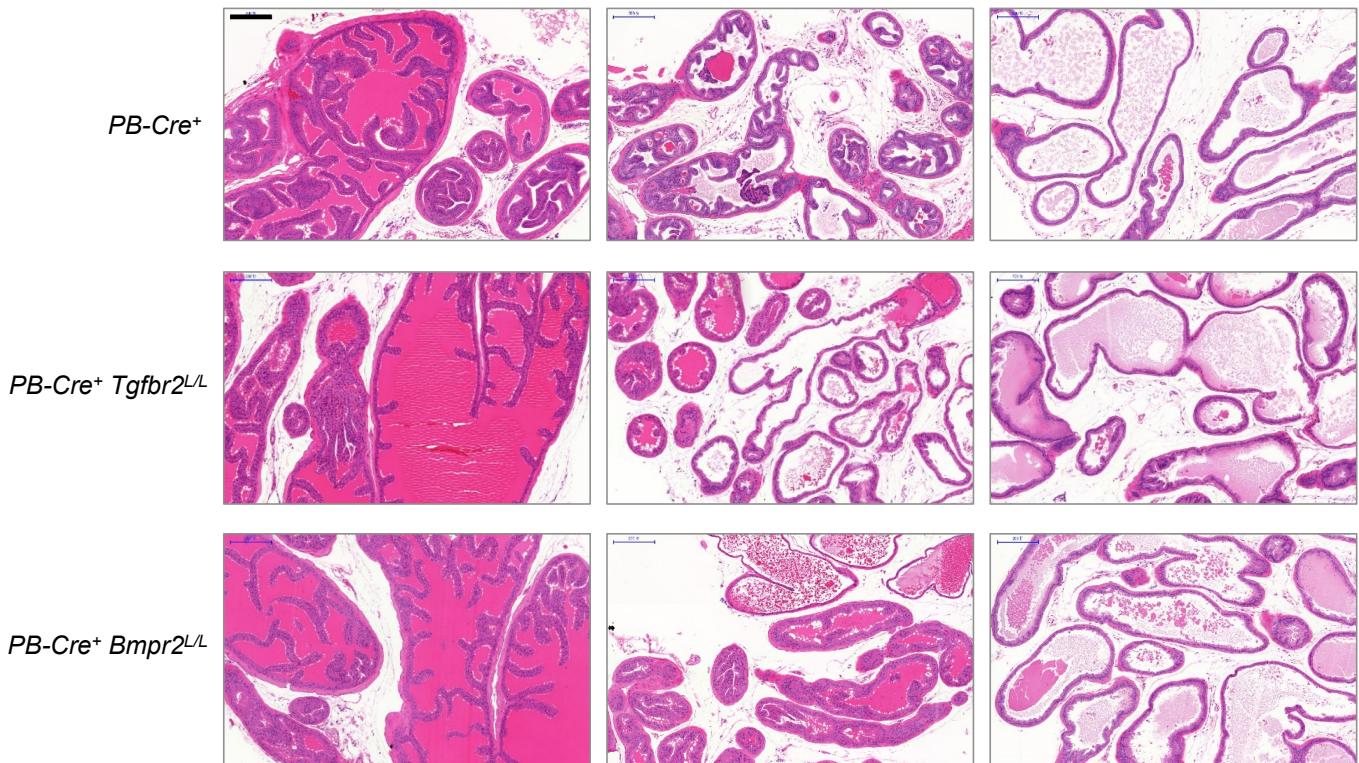
Supplemental Table S2. List of top canonical pathways identified in IPA based on the differentially expressed genes between *PB-Cre⁺ Pten^{L/L}* and *PB-Cre⁺ Pten^{L/L} Bmpr2^{L/L}* tumors.

Supplemental Table S3. List of top putative master regulators identified in IPA based on causal network analysis of the differentially expressed genes between *PB-Cre⁺ Pten^{L/L}* and *PB-Cre⁺ Pten^{L/L} Bmpr2^{L/L}* tumors.

Supplemental Table S4. List of genes that account for the identification of lipopolysaccharide in the Upstream Regulator analysis in IPA, based on the differentially expressed genes between *PB-Cre⁺ Pten^{L/L}* and *PB-Cre⁺ Pten^{L/L} Bmpr2^{L/L}* tumors.

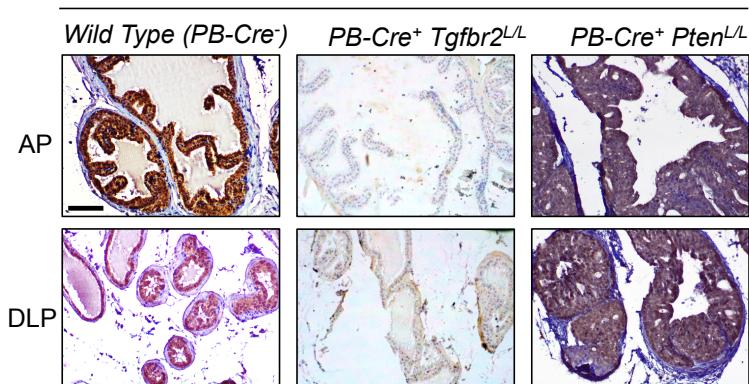
Supplemental Table S5. List of primers for qRT-PCR.

A AP DLP VP



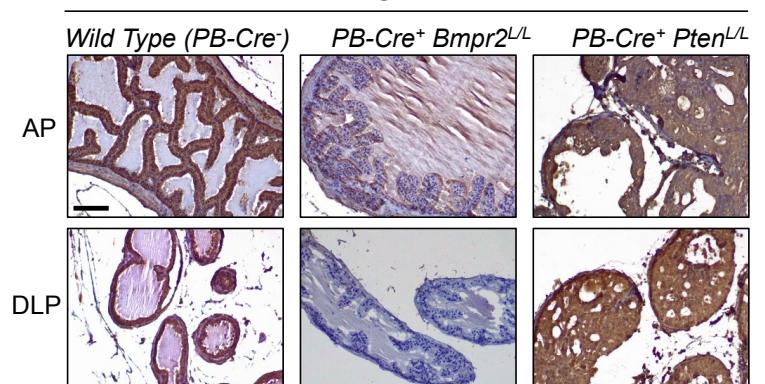
B

IHC: TGFBR2



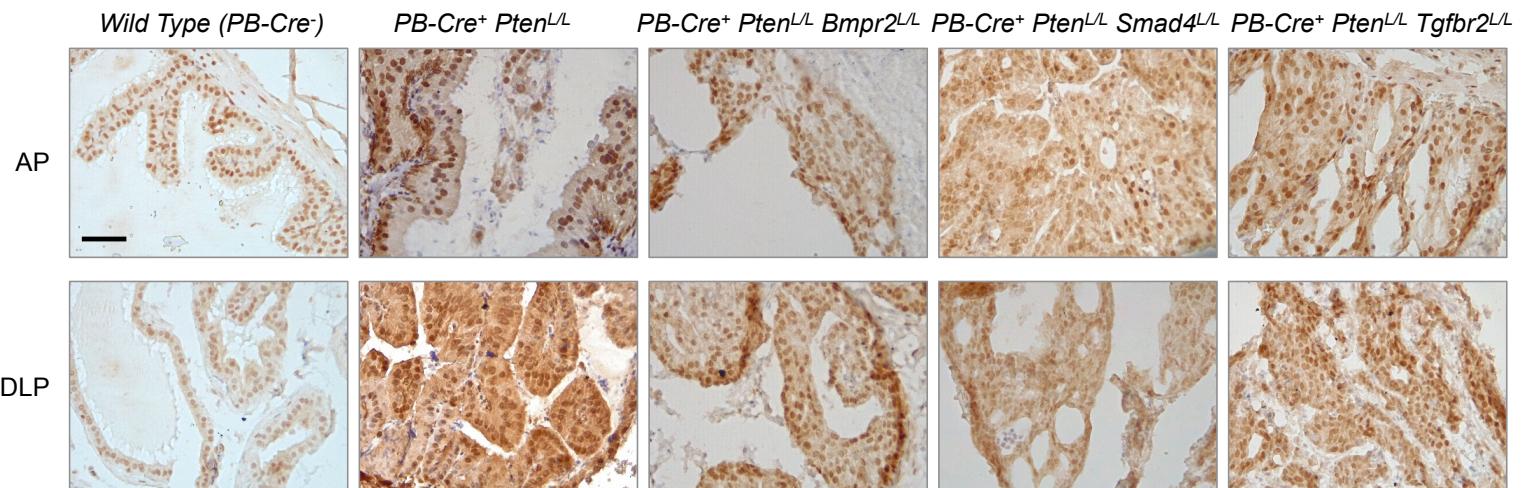
C

IHC: BMPR2

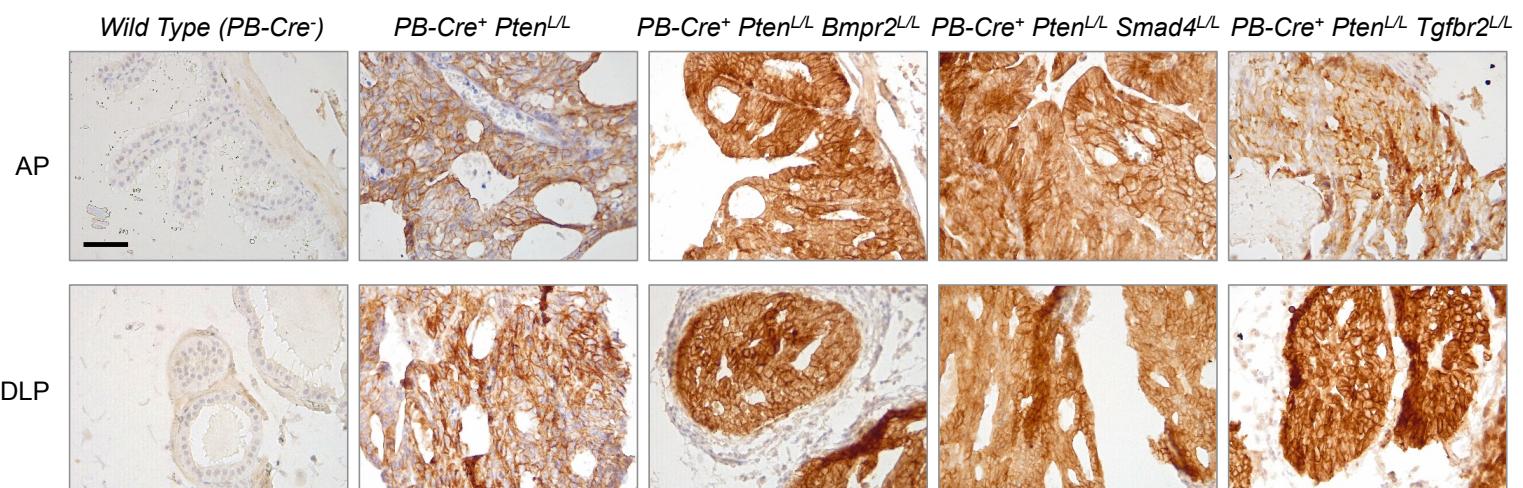
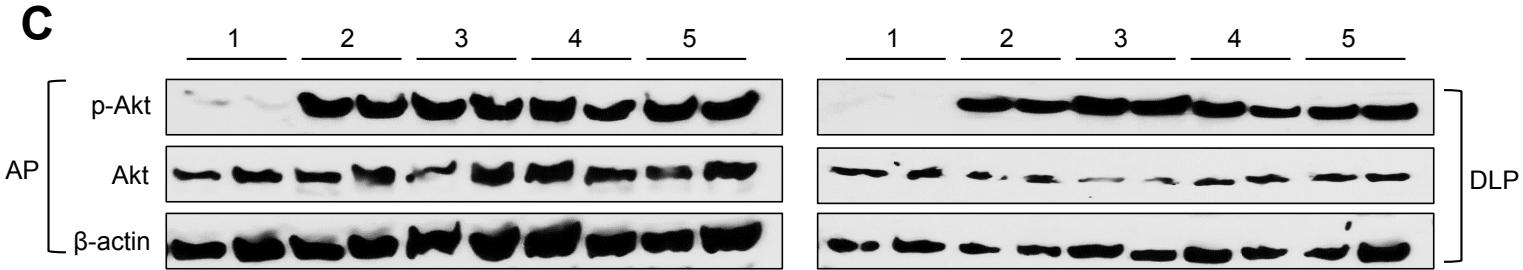


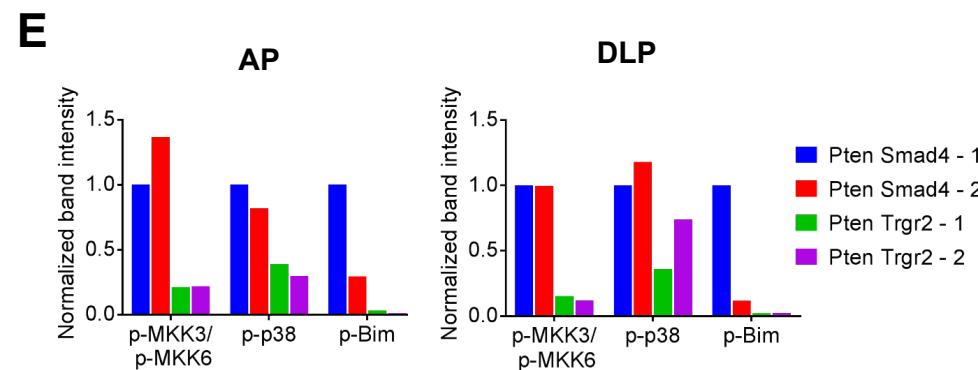
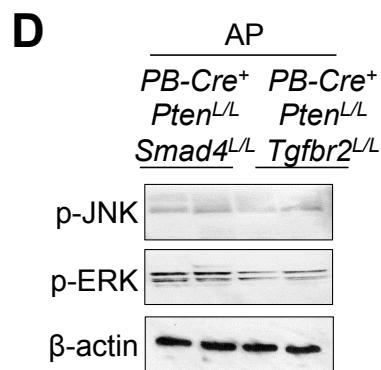
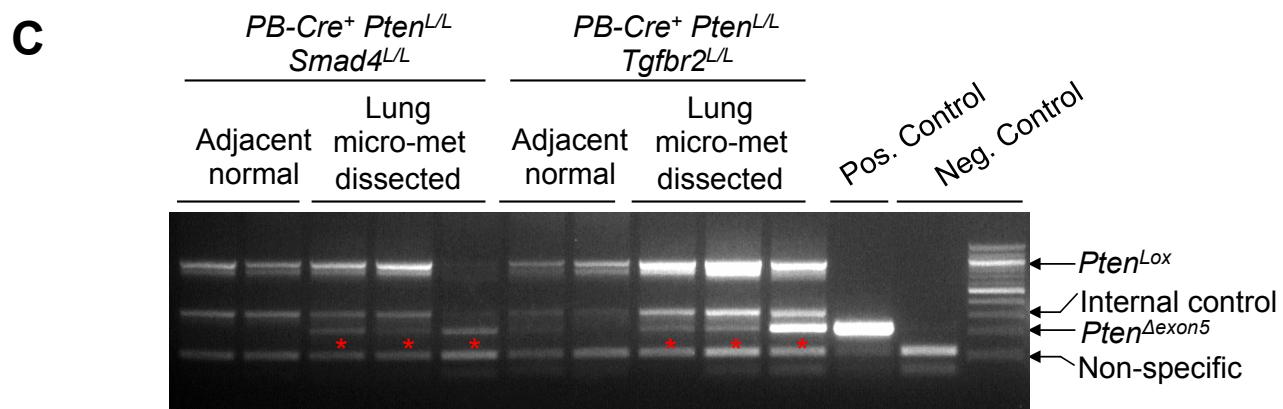
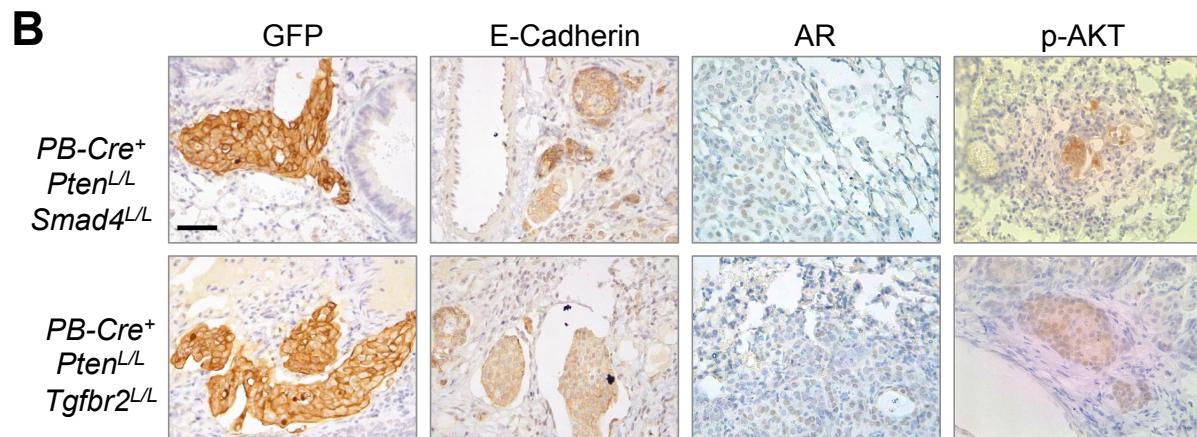
A

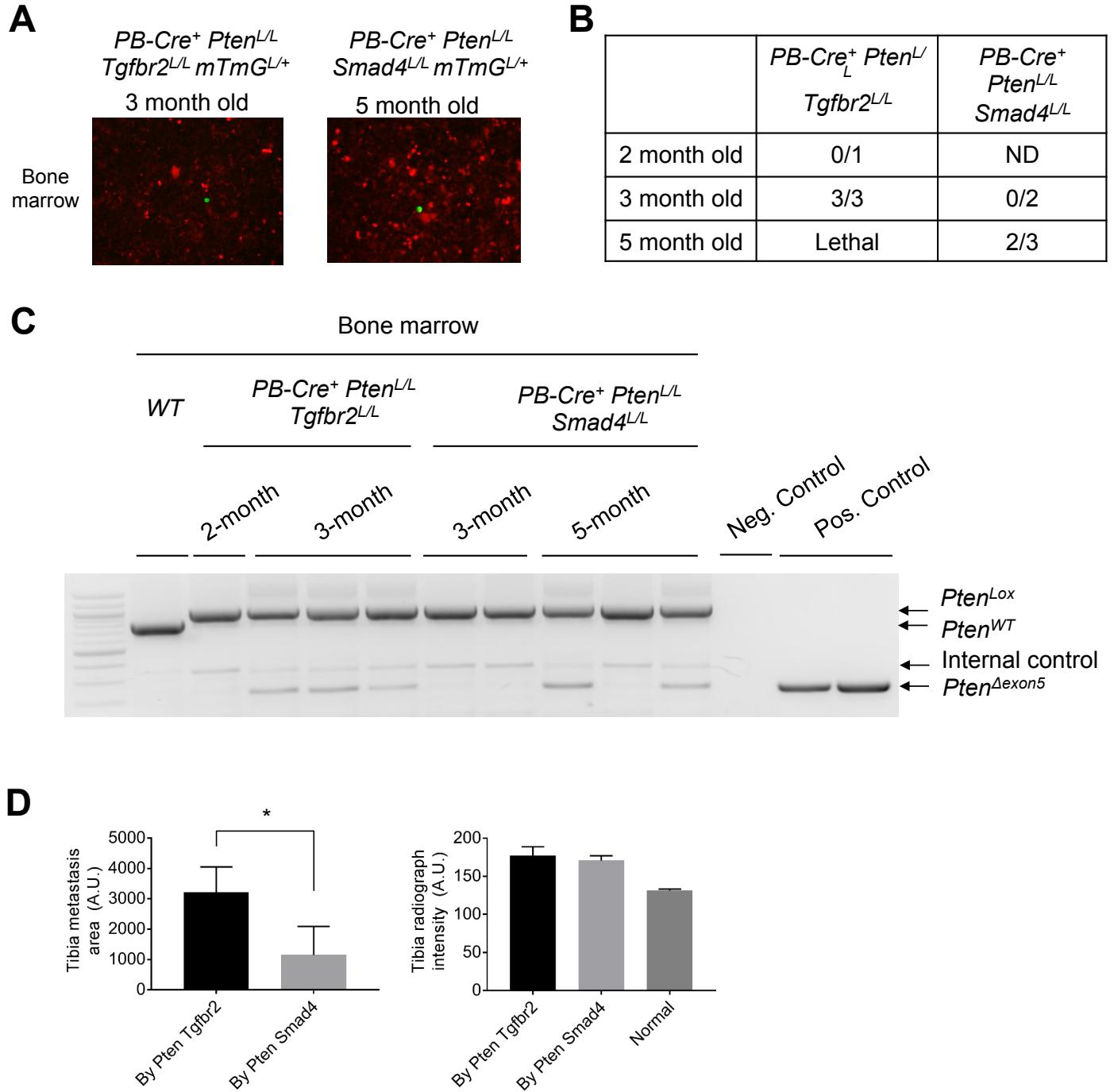
IHC: AR

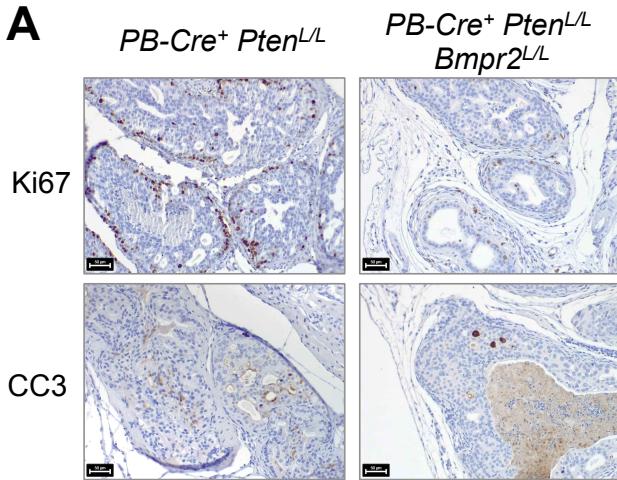
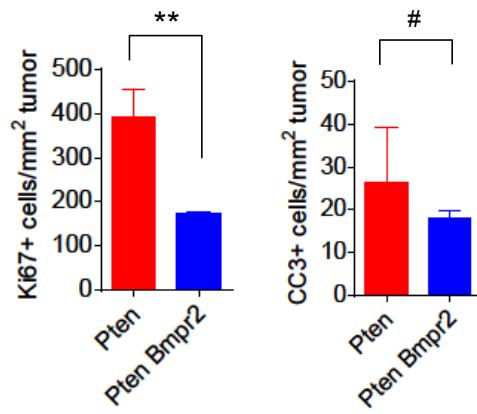
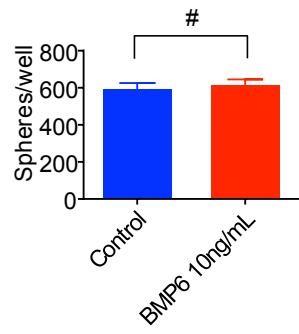
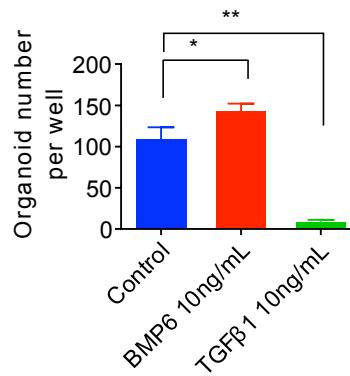
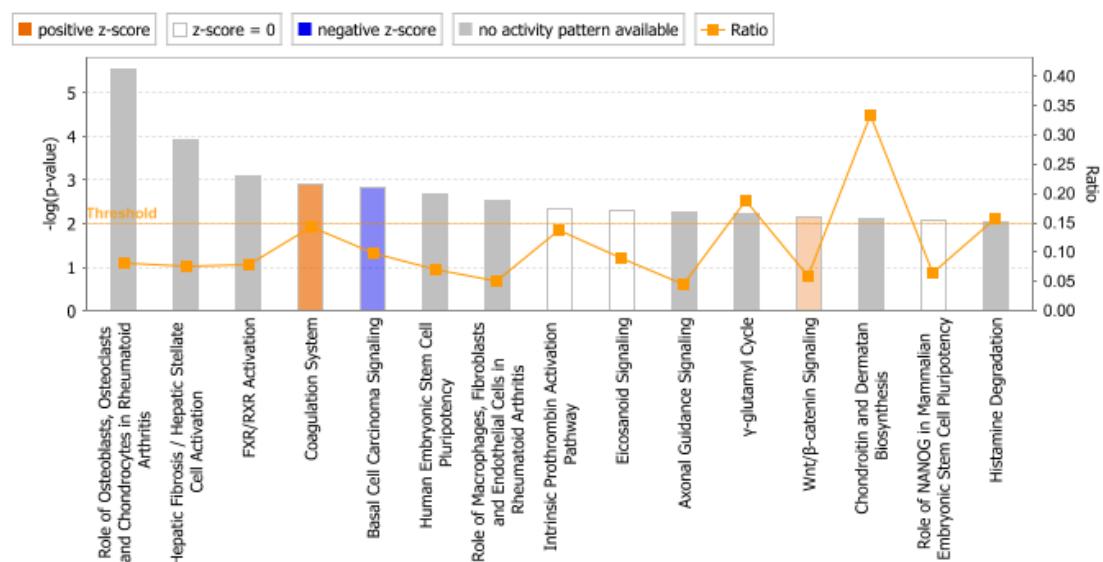
**B**

IHC: phospho-AKT

**C**





A**B****C****D****E**

Supplemental Table S1. Differentially Expressed Genes in Mouse Prostate Tumors

Genes	log2FoldChange	stat	pvalue	padj	PTEN_AP.mean	PTEN_BMP_AP.mean	Regulated in Pten/Bmpr2
Pate4	-9.556265748	-29.30662289	8.54E-189	1.38E-184	53376.79265	40.04510063	Downregulated
Svs2	-9.715895568	-27.4120445	1.97E-165	1.60E-161	681087.5646	396.642544	Downregulated
Svs5	-9.161321114	-25.60825043	1.23E-144	6.67E-141	186678.3228	164.0570953	Downregulated
9530003J23Rik	-8.817380201	-21.32580466	6.54E-101	2.65E-97	3492.54424	2.206671415	Downregulated
Cldn2	-4.811885915	-14.35229853	1.03E-46	3.34E-43	1078.23736	28.57423148	Downregulated
Gm17689	-6.791567283	-13.74735147	5.28E-43	1.43E-39	261.8036498	0	Downregulated
Smoc1	-2.173758623	-13.17859855	1.17E-39	2.70E-36	461.5188176	99.03869332	Downregulated
Pou3f3	-6.720211091	-13.13675818	2.03E-39	4.11E-36	506.1668336	0.277072575	Downregulated
4930525D18Rik	-6.605403082	-12.79004736	1.86E-37	3.36E-34	332.3619969	0	Downregulated
Defb42	-6.724042662	-12.65807991	1.01E-36	1.64E-33	2034.980352	1.417640033	Downregulated
Reg3b	-4.231604486	-12.51777131	5.97E-36	8.80E-33	29566.72349	1214.043938	Downregulated
Nefh	-6.017626385	-11.7854822	4.64E-32	6.26E-29	19174.78413	71.27833116	Downregulated
A730046J19Rik	-5.249411883	-11.26634191	1.92E-29	2.40E-26	169.0674452	1.680650494	Downregulated
Myrf	-2.441034325	-11.22586744	3.04E-29	3.52E-26	353.5120924	61.78743986	Downregulated
Reg1	-4.654927244	-11.12991109	8.97E-29	9.70E-26	995.9517931	23.73660559	Downregulated
Lpo	-5.458299692	-11.02841075	2.79E-28	2.82E-25	2100.309095	15.96281164	Downregulated
Cdo1	-4.874882992	-10.54529592	5.34E-26	5.09E-23	18234.86646	300.9184003	Downregulated
Aass	-4.602095882	-10.4378226	1.67E-25	1.50E-22	237.9229268	5.230498439	Downregulated
Nr4a3	-3.517068462	-9.881137175	5.03E-23	4.29E-20	327.2714699	22.20146584	Downregulated
Hnf4a	-1.985152012	-9.745297714	1.93E-22	1.57E-19	2504.0227	608.5554814	Downregulated
Onecut2	-2.786445799	-9.597683842	8.18E-22	6.31E-19	3031.693052	390.4838664	Downregulated
Serpine2	-3.464738901	-9.536496245	1.48E-21	1.09E-18	6513.886994	458.0027013	Downregulated
Pla2g2d	-1.987866251	-9.208794071	3.30E-20	2.32E-17	173.8251873	42.07557068	Downregulated
5930403L14Rik	-4.117921363	-9.153933532	5.49E-20	3.71E-17	188.0077446	6.026135942	Downregulated
Kif12	-4.319056451	-9.124348645	7.22E-20	4.68E-17	115.5061363	2.683050001	Downregulated
Upb1	-4.292438255	-8.968108675	3.02E-19	1.88E-16	262.9221521	6.37852189	Downregulated
Ret	-1.907439571	-8.852393842	8.57E-19	4.99E-16	609.876557	155.8138925	Downregulated
Lmo3	-4.858652919	-8.745281313	2.22E-18	1.24E-15	65.68674129	0	Downregulated
Pklr	-2.073567011	-8.715601812	2.89E-18	1.56E-15	473.6510065	106.647045	Downregulated
Reg3g	-2.00271066	-8.698287995	3.37E-18	1.76E-15	26759.78143	6346.621476	Downregulated
Cyp4a12a	-5.035935098	-8.624961074	6.41E-18	3.15E-15	2361.795794	1.66658838	Downregulated
Eps8l3	-1.847253204	-8.628008394	6.24E-18	3.15E-15	450.8030894	120.4600571	Downregulated
Lrrc66	-2.795186951	-8.528515631	1.48E-17	7.07E-15	118.6962211	14.64275654	Downregulated
Tmem108	-2.564878559	-8.491099264	2.05E-17	9.48E-15	348.6723044	52.40745892	Downregulated
Gucy2c	-1.525134307	-8.473441348	2.38E-17	1.07E-14	367.0459856	124.9239089	Downregulated
Unc79	-4.62186606	-8.423065964	3.67E-17	1.61E-14	864.9612935	7.991315003	Downregulated
Emx2	-4.564646122	-8.380058961	5.29E-17	2.26E-14	956.7862722	10.14504102	Downregulated
Ddah1	-2.657654895	-8.341514369	7.33E-17	3.05E-14	482.6763731	66.65001689	Downregulated
Pear1	-1.528340831	-8.326260841	8.34E-17	3.38E-14	1363.916833	462.0314649	Downregulated
Hapln4	-4.081366505	-8.153097484	3.55E-16	1.39E-13	112.2946282	2.774878678	Downregulated
Sgpp2	-2.236188854	-8.151321618	3.60E-16	1.39E-13	397.8508975	77.80980301	Downregulated
Gm5420	-4.471843456	-8.111994929	4.98E-16	1.88E-13	727.6846084	7.675359147	Downregulated
Bpgm	-2.226553234	-8.043375391	8.74E-16	3.15E-13	3922.271397	769.4992107	Downregulated
Smpd3	-2.261602717	-8.013211433	1.12E-15	3.94E-13	1718.19453	327.5218893	Downregulated
Tmem236	-2.365026411	-7.984081046	1.42E-15	4.78E-13	133.2618624	23.44792409	Downregulated
Cym	-2.951717743	-7.961949716	1.69E-15	5.60E-13	642.1440476	66.27624281	Downregulated
Myo7b	-2.270163102	-7.893830414	2.93E-15	9.50E-13	1019.149365	192.397654	Downregulated
Shisa4	-2.353509845	-7.85281938	4.07E-15	1.29E-12	718.6692729	125.9858264	Downregulated
Scf2	2.391071803	7.775838807	7.49E-15	2.34E-12	331.6551559	1943.785273	Upregulated
Angptl4	-1.85309094	-7.697055185	1.39E-14	4.26E-12	174.5831163	45.98514737	Downregulated
Clcn5	-2.011401455	-7.688382382	1.49E-14	4.47E-12	758.9901816	175.7208237	Downregulated
Sord	-1.567401902	-7.647902295	2.04E-14	6.02E-12	2973.610391	972.1297815	Downregulated
Crlf1	-2.280067503	-7.619080421	2.55E-14	7.40E-12	1218.364233	226.3608062	Downregulated
Rasgrf2	-2.376443236	-7.389090654	1.48E-13	4.20E-11	242.3963836	40.78448968	Downregulated
P2rx1	-3.358361035	-7.370370617	1.70E-13	4.67E-11	319.7108166	19.51095984	Downregulated
Kcna2	-3.260707521	-7.370488654	1.70E-13	4.67E-11	629.4627437	43.54017346	Downregulated
Spock1	-2.323668251	-7.332450102	2.26E-13	6.10E-11	227.6825993	40.04744062	Downregulated
Syndig1	-1.744786493	-7.239801971	4.49E-13	1.19E-10	112.6767401	31.94459178	Downregulated
Ush1c	-1.800759262	-7.170903989	7.45E-13	1.95E-10	115.2751682	31.27709984	Downregulated
Mybpc1	-3.78571872	-7.110375185	1.16E-12	2.98E-10	210.8672631	5.739154185	Downregulated
Tm4sf4	-2.674855666	-7.091725683	1.32E-12	3.35E-10	200.8361397	25.4238622	Downregulated
Calml4	-2.420663532	-7.038167029	1.95E-12	4.86E-10	583.2272834	93.45410918	Downregulated
Ero1lb	-1.960876504	-6.97240616	3.12E-12	7.54E-10	523.5577488	124.039859	Downregulated
Rgs13	-1.873108742	-6.943698342	3.82E-12	9.10E-10	142.6867451	36.12133185	Downregulated
Myo3b	-3.698033647	-6.90021908	5.19E-12	1.22E-09	117.4126657	3.297596538	Downregulated

Glis3	-2.295632334	-6.89484472	5.39E-12	1.25E-09	469.5825897	83.51796594	Downregulated
Prr9	2.810707474	6.798665094	1.06E-11	2.41E-09	28.13075538	259.4485918	Upregulated
Emx2os	-3.344742959	-6.772849075	1.26E-11	2.84E-09	201.7776586	10.71985441	Downregulated
Wnt7a	-3.495157286	-6.750515962	1.47E-11	3.27E-09	76.50777223	3.045345131	Downregulated
Cyp4f40	-2.227415624	-6.743376747	1.55E-11	3.39E-09	85.65781545	16.22412236	Downregulated
St8sia3	-3.284992872	-6.729681343	1.70E-11	3.66E-09	53.86624207	3.066013366	Downregulated
Gm12505	-2.132948439	-6.699125333	2.10E-11	4.30E-09	211.650555	43.19216685	Downregulated
Gpr81	-3.284469962	-6.681928641	2.36E-11	4.72E-09	122.6796581	6.882174833	Downregulated
Epx	-3.872618757	-6.676834383	2.44E-11	4.83E-09	65.4512221	0.550842089	Downregulated
Tmem150b	-2.020446048	-6.674417034	2.48E-11	4.85E-09	84.28467132	18.98578879	Downregulated
Adam23	-3.430915028	-6.557214481	5.48E-11	1.01E-08	995.5899198	42.52714488	Downregulated
Hnf1a	-1.616785857	-6.522618888	6.91E-11	1.26E-08	114.0343711	35.47292161	Downregulated
S100b	-2.163140007	-6.516189341	7.21E-11	1.30E-08	194.9514628	38.4711908	Downregulated
Nkx3-1	1.953922559	6.513802095	7.33E-11	1.31E-08	43.39901216	182.7133429	Upregulated
2900092D14Rik	-3.828567007	-6.511391696	7.45E-11	1.31E-08	28.72154701	0	Downregulated
Gpr133	-1.654856566	-6.505772203	7.73E-11	1.35E-08	1290.15584	389.3054655	Downregulated
Kcnj16	-3.642580792	-6.492054746	8.47E-11	1.44E-08	110.267041	2.458922822	Downregulated
Gata5	-2.871838894	-6.491989935	8.47E-11	1.44E-08	87.73190735	8.34615414	Downregulated
Alox5ap	-1.60236227	-6.472360871	9.65E-11	1.60E-08	617.1129178	193.2832905	Downregulated
Bmpr2	-1.674400485	-6.465776735	1.01E-10	1.65E-08	804.8735047	239.1013347	Downregulated
Anks4b	-2.057327859	-6.414073903	1.42E-10	2.25E-08	142.4426744	30.61951709	Downregulated
Pax2	-3.876607917	-6.392996848	1.63E-10	2.54E-08	265.975673	0.263010461	Downregulated
Psg25	-2.6017078	-6.391325312	1.64E-10	2.54E-08	90.95575717	11.59080528	Downregulated
Slc41a2	-2.080172038	-6.361141593	2.00E-10	3.06E-08	925.8561204	194.6030156	Downregulated
Tinag	-1.742474626	-6.355035744	2.08E-10	3.16E-08	132.8367839	37.47453077	Downregulated
Slc4a8	-2.36310816	-6.343500604	2.25E-10	3.37E-08	598.9338007	96.74668614	Downregulated
Rhobtb3	-1.638234661	-6.263538522	3.76E-10	5.60E-08	585.7151304	177.5094953	Downregulated
Grk2	-3.333874595	-6.261632249	3.81E-10	5.61E-08	41.9785527	1.66658838	Downregulated
Clcnkb	-2.793243251	-6.243123024	4.29E-10	6.24E-08	89.35513378	8.86556894	Downregulated
Pla2g2f	-3.71359539	-6.220298581	4.96E-10	7.12E-08	395.1591626	3.421702376	Downregulated
Fam20c	-1.514251154	-6.177417968	6.52E-10	9.26E-08	898.1165529	300.2436117	Downregulated
Gpr55	-2.054115691	-6.121480005	9.27E-10	1.27E-07	77.16384378	16.32084064	Downregulated
Sod3	-1.697471937	-6.122434765	9.22E-10	1.27E-07	896.0036489	259.0898237	Downregulated
Tfap2b	-3.640772564	-6.118813103	9.43E-10	1.28E-07	73.13021517	0.554145149	Downregulated
Glrx	-1.506866419	-6.096634753	1.08E-09	1.46E-07	675.6804341	227.3450243	Downregulated
Cr2	-3.383195887	-6.060944746	1.35E-09	1.80E-07	81.40497595	2.558207492	Downregulated
Gp2	-2.581065847	-6.053875286	1.41E-09	1.86E-07	249.8089943	31.42700669	Downregulated
Ggt1	-2.139104691	-6.01223259	1.83E-09	2.37E-07	1630.025801	319.2345039	Downregulated
Grip2	-1.711308851	-5.976413312	2.28E-09	2.87E-07	109.9447704	31.02569831	Downregulated
Lrrn1	-2.378882233	-5.966201219	2.43E-09	3.03E-07	319.8159266	49.16120446	Downregulated
1700112E06Rik	2.747344462	5.963257682	2.47E-09	3.06E-07	5.797878515	58.94079404	Upregulated
Glt1d1	1.810385162	5.937327649	2.90E-09	3.51E-07	38.4789406	147.6732869	Upregulated
Spink8	-3.620655466	-5.915360158	3.31E-09	3.95E-07	2404.255257	4.668897297	Downregulated
St6galnac3	-2.558314602	-5.915212508	3.31E-09	3.95E-07	135.7436482	16.95775516	Downregulated
Dkk1	-2.616345744	-5.912765632	3.36E-09	3.98E-07	151.092304	17.69959739	Downregulated
Bche	-2.03250262	-5.897948472	3.68E-09	4.32E-07	92.13036432	19.6416718	Downregulated
Elf5	-2.868747897	-5.883832897	4.01E-09	4.67E-07	2521.046284	212.7160627	Downregulated
Ptgds	-3.287190793	-5.817547791	5.97E-09	6.75E-07	113.6281681	3.738394903	Downregulated
Gpr110	-2.13342896	-5.7882884	7.11E-09	7.84E-07	245.8957238	47.46979491	Downregulated
Fgfr4	-2.385651956	-5.782417962	7.36E-09	8.06E-07	45.49650307	6.776284042	Downregulated
Mgam	-2.192504397	-5.755856724	8.62E-09	9.25E-07	452.1723188	82.81455418	Downregulated
Bdkrb1	-2.141245466	-5.729621972	1.01E-08	1.07E-06	94.81619521	18.29262582	Downregulated
Plcb1	-1.580176562	-5.70933258	1.13E-08	1.20E-06	240.6651624	75.31711291	Downregulated
Ces1d	-1.923335221	-5.700980549	1.19E-08	1.25E-06	1803.236428	423.0665807	Downregulated
Gpr150	-3.295626696	-5.697748933	1.21E-08	1.26E-06	27.03279361	0.540083035	Downregulated
2700070H01Rik	-3.085040539	-5.698303818	1.21E-08	1.26E-06	106.5487788	5.521633127	Downregulated
Foxi1	-2.493391658	-5.682961917	1.32E-08	1.37E-06	353.4187549	46.33351036	Downregulated
1500015O10Rik	-2.041122812	-5.674960469	1.39E-08	1.42E-06	120.5232968	25.48586691	Downregulated
Gm8615	-2.9829356	-5.672672915	1.41E-08	1.43E-06	119.9942192	7.604198705	Downregulated
Gnat3	-2.092657522	-5.671453685	1.42E-08	1.43E-06	55.19763721	10.89849218	Downregulated
Trpv6	-1.861787299	-5.664869049	1.47E-08	1.48E-06	914.7574585	226.263498	Downregulated
Gprin3	-2.107152713	-5.613340368	1.98E-08	1.95E-06	58.54678334	11.58750222	Downregulated
Tmem59l	-1.982381677	-5.57285846	2.51E-08	2.41E-06	44.87561325	10.00198347	Downregulated
Dnajc22	-1.74621391	-5.572173925	2.52E-08	2.41E-06	231.6319243	63.26289811	Downregulated
Clrn3	-1.977496936	-5.569892177	2.55E-08	2.43E-06	129.8930045	28.91085557	Downregulated
Vcam1	-1.643383744	-5.561877141	2.67E-08	2.53E-06	1119.439214	333.3940954	Downregulated
Rprm	-2.419191263	-5.551133012	2.84E-08	2.66E-06	122.0647763	17.01241707	Downregulated
Tcf15	1.504029069	5.520192845	3.39E-08	3.15E-06	46.4499388	138.8428454	Upregulated

Atp6v1g3	-2.605419031	-5.494124303	3.93E-08	3.60E-06	131.8182485	14.36568396	Downregulated
Osbp2	-2.945928468	-5.487487962	4.08E-08	3.71E-06	657.043836	41.18957785	Downregulated
Avil	-1.681412627	-5.476607285	4.34E-08	3.88E-06	543.7773385	155.9020449	Downregulated
Scn8a	-1.55899285	-5.445664607	5.16E-08	4.52E-06	169.2572288	53.97389598	Downregulated
Dkgk	-2.577438747	-5.438616828	5.37E-08	4.68E-06	93.01939239	10.31952587	Downregulated
Bglap3	-1.90330586	-5.412852329	6.20E-08	5.29E-06	728.0928953	171.2333348	Downregulated
Slc26a3	-2.615635312	-5.406085544	6.44E-08	5.47E-06	52.83092924	5.447169625	Downregulated
Zkscan16	-2.839913669	-5.401342951	6.61E-08	5.58E-06	75.6719393	5.412439276	Downregulated
Ccno	-2.742117062	-5.391609968	6.98E-08	5.83E-06	29.83604218	2.458922822	Downregulated
Krt78	1.532719633	5.383687068	7.30E-08	6.07E-06	730.4194849	2245.321983	Upregulated
Hoxb8	-2.002322327	-5.380346743	7.43E-08	6.15E-06	747.2089073	159.6714072	Downregulated
Rnase1	1.787067484	5.341966324	9.19E-08	7.41E-06	107.9403281	413.9406138	Upregulated
Crisp3	-1.95917074	-5.276880699	1.31E-07	1.03E-05	85.85499346	18.98824198	Downregulated
Dmrt2	-2.448571364	-5.251934417	1.51E-07	1.17E-05	187.3451149	23.93762812	Downregulated
Trpm5	-1.646430406	-5.251658486	1.51E-07	1.17E-05	566.1360611	165.9511043	Downregulated
Duoxa2	-2.402679194	-5.245582105	1.56E-07	1.20E-05	466.4909942	63.55327936	Downregulated
Gm5294	-3.208918026	-5.240467211	1.60E-07	1.23E-05	28.02267638	0	Downregulated
Sox11	-2.158320556	-5.199777006	2.00E-07	1.51E-05	141.9940321	25.3544015	Downregulated
Sv2b	-1.815806471	-5.193200613	2.07E-07	1.56E-05	92.96781924	23.62240893	Downregulated
Zfp648	-3.147735579	-5.189759785	2.11E-07	1.58E-05	15.0360491	0	Downregulated
Serpinb9b	-2.269988907	-5.166618357	2.38E-07	1.74E-05	83.32924184	13.27145578	Downregulated
Ncald	-1.753028288	-5.167141776	2.38E-07	1.74E-05	346.5517934	92.1358838	Downregulated
Samd5	-1.506581642	-5.167739914	2.37E-07	1.74E-05	120.5696239	39.94079638	Downregulated
Spon1	-2.010975825	-5.155600847	2.53E-07	1.83E-05	2426.838548	506.2618361	Downregulated
Cd52	-2.575851415	-5.148744063	2.62E-07	1.88E-05	5611.5504	587.3374202	Downregulated
Siglec5	-1.699825419	-5.126604325	2.95E-07	2.09E-05	51.88653639	14.52940975	Downregulated
Defb30	-3.146031288	-5.120938177	3.04E-07	2.14E-05	28.67211043	0	Downregulated
Best1	-1.725962869	-5.115652357	3.13E-07	2.19E-05	63.43700534	17.21000656	Downregulated
Spib	-1.799288097	-5.083953453	3.70E-07	2.55E-05	199.1064117	50.39762355	Downregulated
Mum111	-2.775248763	-5.082698842	3.72E-07	2.56E-05	87.60263491	5.994708653	Downregulated
Plau	-2.450911315	-5.081598209	3.74E-07	2.56E-05	4910.803356	605.4274495	Downregulated
Duox2	-1.966321003	-5.077400337	3.83E-07	2.60E-05	1346.64216	291.778627	Downregulated
Nr1i2	-1.683522104	-5.077130484	3.83E-07	2.60E-05	118.2695307	33.28765511	Downregulated
Jakmip2	-2.791642129	-5.072706865	3.92E-07	2.64E-05	55.78617513	3.56721312	Downregulated
Kcnd2	-2.560702715	-5.06868848	4.01E-07	2.68E-05	93.42595617	9.552012591	Downregulated
Agtr1a	1.689485972	5.067401182	4.03E-07	2.69E-05	153.9682206	551.3469034	Upregulated
Adam12	-2.008808608	-5.06632534	4.06E-07	2.69E-05	201.9482585	41.97052976	Downregulated
Hoxb2	-2.069421261	-5.047886106	4.47E-07	2.92E-05	157.4436255	30.32177628	Downregulated
Gprc5b	-1.664457513	-5.043213104	4.58E-07	2.98E-05	1040.978703	298.2358156	Downregulated
Phgr1	-1.86670282	-5.00806337	5.50E-07	3.55E-05	395.9939956	94.05948321	Downregulated
Gpr179	-2.128659327	-4.945987073	7.58E-07	4.82E-05	96.73941854	17.23739412	Downregulated
Slc23a1	-2.019087754	-4.944479056	7.63E-07	4.83E-05	282.860566	57.0574045	Downregulated
Odam	-3.032809404	-4.902788357	9.45E-07	5.85E-05	243.3050391	1.385362873	Downregulated
Gabra1	-2.590877275	-4.898681445	9.65E-07	5.90E-05	22.25547287	1.915536726	Downregulated
Al464131	-1.566327146	-4.899373687	9.61E-07	5.90E-05	431.0503792	133.4752217	Downregulated
B230217O12Rik	-2.67896126	-4.894484809	9.86E-07	6.01E-05	74.04469319	5.510874074	Downregulated
Bmx	-1.567659097	-4.88342367	1.04E-06	6.27E-05	125.6442536	38.65705817	Downregulated
Pfkfb3	-2.273410648	-4.851246422	1.23E-06	7.21E-05	8873.485137	1316.839238	Downregulated
Lrrc32	-1.564427637	-4.846098159	1.26E-06	7.37E-05	1673.163093	520.1549691	Downregulated
Slc30a2	-2.165967532	-4.826234751	1.39E-06	8.08E-05	231.5585904	38.87457923	Downregulated
Rgs9	-1.763205231	-4.812406619	1.49E-06	8.51E-05	236.6814193	60.9241546	Downregulated
4930539E08Rik	-1.532356168	-4.806850476	1.53E-06	8.72E-05	77.39629534	24.68520983	Downregulated
Kcnc4	-2.460542111	-4.799649907	1.59E-06	9.01E-05	51.11017177	5.546454295	Downregulated
Rgs6	-2.797994907	-4.783182397	1.73E-06	9.58E-05	26.82064513	1.090925124	Downregulated
Aldh1l1	-1.590361414	-4.776529405	1.78E-06	9.87E-05	973.9271269	294.842271	Downregulated
Habp2	-1.763533683	-4.755051679	1.98E-06	0.000108493	209.7602899	53.8945261	Downregulated
Bmper	-1.685570183	-4.745930132	2.08E-06	0.000112892	332.5930355	92.48982274	Downregulated
Cth	-1.848075471	-4.742567372	2.11E-06	0.000114399	118.9881635	27.93988335	Downregulated
Clec2h	-2.285076481	-4.741464402	2.12E-06	0.000114646	70.33294367	9.949038071	Downregulated
Mamld1	-1.502353296	-4.737303124	2.17E-06	0.000116244	371.3119082	120.7125517	Downregulated
Crisp1	-2.941304282	-4.724443659	2.31E-06	0.000123032	5550.688246	4.985703025	Downregulated
Sim1	-2.755535753	-4.723617203	2.32E-06	0.000123128	24.7295883	1.08016607	Downregulated
Abcg2	-1.592967345	-4.714754616	2.42E-06	0.000127358	1010.550288	304.0864911	Downregulated
Mup20	-2.44424851	-4.697364378	2.64E-06	0.000137354	210.7269765	23.05848457	Downregulated
Vash2	-2.064487228	-4.693467307	2.69E-06	0.00013955	116.1552344	21.48433157	Downregulated
Cyp2j13	-2.881271765	-4.683527697	2.82E-06	0.000145099	204.8685373	3.180946694	Downregulated
2610528A11Rik	2.078548585	4.65900508	3.18E-06	0.00016145	61.64410739	335.9257384	Upregulated
Muc5b	-1.648656144	-4.639174487	3.50E-06	0.000175541	907.4794051	258.6369157	Downregulated

Casq1	-2.522573612	-4.632164096	3.62E-06	0.000181032	73.56995879	6.531488627	Downregulated
Snap91	-2.059689157	-4.610072858	4.03E-06	0.000199528	50.19180682	9.071481073	Downregulated
Defb50	1.751561823	4.60796989	4.07E-06	0.000200942	257.4151509	994.911617	Upregulated
Slc35f2	-2.118169036	-4.581157461	4.62E-06	0.000225759	169.5779283	28.8810316	Downregulated
Slpi	-1.526272896	-4.575340786	4.75E-06	0.000230045	554.2398634	176.2543413	Downregulated
Gm996	-2.06324901	-4.564080992	5.02E-06	0.000241301	68.41074941	12.28800799	Downregulated
Slc14a2	-2.778622475	-4.546175973	5.46E-06	0.000260736	29.11475737	0.554145149	Downregulated
BC048546	-2.430174628	-4.519657751	6.19E-06	0.000290168	33.30151588	3.283534424	Downregulated
Chrdl2	-2.167276724	-4.501762024	6.74E-06	0.000309601	49.52472189	7.775493688	Downregulated
Scin	-1.841869212	-4.501659347	6.74E-06	0.000309601	233.4700016	54.17025531	Downregulated
Fam5c	-2.586377886	-4.475164904	7.64E-06	0.000348618	30.35431973	1.92959884	Downregulated
Bmp15	-2.14864118	-4.46303168	8.08E-06	0.000365871	26.82006492	4.175153536	Downregulated
Msmb	2.276172066	4.452020888	8.51E-06	0.000380893	12.59010248	94.60349278	Upregulated
Ptgs2	-2.5094228	-4.421936735	9.78E-06	0.000427376	1439.416542	114.4687479	Downregulated
Npy2r	-2.101188017	-4.409309397	1.04E-05	0.00045064	43.65891602	7.330542391	Downregulated
Gm16063	-2.359002069	-4.391884345	1.12E-05	0.000481352	38.57335897	4.08993098	Downregulated
2010001M06Rik	-1.538911006	-4.337609991	1.44E-05	0.000611192	173.9569411	53.63666519	Downregulated
C030034L19Rik	-2.248059157	-4.335877434	1.45E-05	0.000614296	109.6931936	14.34416585	Downregulated
Fam25c	1.607435766	4.321510816	1.55E-05	0.000647376	115.5142014	396.2701343	Upregulated
Wisp2	-1.914704018	-4.319368055	1.56E-05	0.000652013	568.6938091	119.4406656	Downregulated
D730048I06Rik	-2.620303672	-4.271201505	1.94E-05	0.000801882	484.8085019	14.82800043	Downregulated
Abcc12	-2.443101666	-4.270504194	1.95E-05	0.000802352	22.03172605	1.655829326	Downregulated
2610017I09Rik	-2.642090429	-4.239582082	2.24E-05	0.000902931	25.08845841	0	Downregulated
Kif5c	-2.011212887	-4.236333387	2.27E-05	0.000909498	211.6105018	38.5289126	Downregulated
Glis1	-1.757480019	-4.225596531	2.38E-05	0.000946751	24.54426605	6.093993323	Downregulated
Wnt16	-2.076249675	-4.223412829	2.41E-05	0.000951312	36.86016057	6.140332597	Downregulated
Apol6	-1.74332576	-4.22071418	2.44E-05	0.000960431	418.750241	104.6355266	Downregulated
Plekhg4	-1.817205053	-4.207691279	2.58E-05	0.001000433	111.5255277	25.51068807	Downregulated
Prg4	-1.703273944	-4.205030988	2.61E-05	0.001009857	214.8126438	56.28998765	Downregulated
Sele	-2.455198472	-4.202559916	2.64E-05	0.001018517	27.59765028	1.841073224	Downregulated
Trpv5	-2.507986183	-4.201934006	2.65E-05	0.001018912	16.90724112	0.803093496	Downregulated
Tbx2	-1.579475238	-4.197883665	2.69E-05	0.00102754	2378.996789	702.6774179	Downregulated
Tm4sf20	-1.55235529	-4.184973822	2.85E-05	0.001075067	92.21455455	28.01178046	Downregulated
1810041L15Rik	-2.122237498	-4.179330516	2.92E-05	0.001096991	71.7251145	10.80336044	Downregulated
C2cd4c	-1.882397243	-4.172597475	3.01E-05	0.001126271	33.58032329	7.202283621	Downregulated
Cln3n2	-1.79919627	-4.135232675	3.55E-05	0.001291603	30.07075469	6.833382369	Downregulated
Tmed6	-2.529239373	-4.129201088	3.64E-05	0.001317075	19.58519401	0.564904203	Downregulated
Fkbp6	-2.561716134	-4.125949323	3.69E-05	0.001330768	9.941371884	0	Downregulated
Rasl10b	-2.074115124	-4.113086045	3.90E-05	0.001400016	25.37896248	4.103993094	Downregulated
Prkcg	-1.699438134	-4.09215008	4.27E-05	0.001512575	121.9720142	31.28529251	Downregulated
Wfdc15b	-2.348460315	-4.080342133	4.50E-05	0.00157432	927.9479664	82.18915217	Downregulated
Anxa9	-1.612612859	-4.077803728	4.55E-05	0.001584756	241.4704832	67.99061026	Downregulated
Tnnc2	-2.416383898	-4.073889219	4.62E-05	0.001608186	255.6943291	17.26540515	Downregulated
Srcn1	-1.85961681	-4.070585625	4.69E-05	0.001627672	484.4161802	103.795606	Downregulated
Lrp2	-2.42752982	-4.07008481	4.70E-05	0.001627689	103.4378592	6.463631246	Downregulated
Crybb1	-2.482665709	-4.068896583	4.72E-05	0.001632523	16.26211512	0.540083035	Downregulated
Csgalnact1	-1.596212821	-4.053436415	5.05E-05	0.001725907	338.6471018	97.60283824	Downregulated
Dbc1	-1.567796882	-4.050079358	5.12E-05	0.001745216	92.534356	27.59836966	Downregulated
Prmt8	-2.526850145	-4.047011424	5.19E-05	0.001748136	31.54448029	0	Downregulated
Pappa2	-1.931216656	-4.047156257	5.18E-05	0.001748136	68.79020309	13.19038615	Downregulated
Bhlha15	-2.004242214	-4.039614937	5.35E-05	0.001789307	1480.127339	259.6108275	Downregulated
Slc1a1	-1.572781961	-4.038800375	5.37E-05	0.001791837	120.5271434	35.29588715	Downregulated
Cldn14	-2.205071139	-4.034638682	5.47E-05	0.001812703	18.6394563	2.181850247	Downregulated
Chma2	-2.276433409	-4.033864422	5.49E-05	0.001814977	59.15672414	5.991405592	Downregulated
Slitrk5	-2.410834289	-4.02358419	5.73E-05	0.00188655	20.41946349	1.115746291	Downregulated
Tmem178	-2.185119861	-4.019906721	5.82E-05	0.001910339	13.44739096	1.66658838	Downregulated
Gjb5	-1.617943327	-4.013240484	5.99E-05	0.001949688	35.21922808	9.815023052	Downregulated
Mapt	-1.647329185	-4.001550399	6.29E-05	0.002023835	97.36087164	26.2094941	Downregulated
Cyp4f15	-2.260327209	-4.000095114	6.33E-05	0.002028272	50.30894968	5.120454715	Downregulated
Cyp2a5	-1.78083816	-3.98131116	6.85E-05	0.002165502	26.262579	6.090690262	Downregulated
Otop3	-2.482874487	-3.977703829	6.96E-05	0.002185827	19.12296188	0	Downregulated
Akr1c21	-2.137118843	-3.97652292	6.99E-05	0.002192456	14.76177559	1.957723068	Downregulated
Prokr1	-1.559149204	-3.973034822	7.10E-05	0.00221625	59.85611941	17.49870484	Downregulated
Dio3	-1.721276397	-3.953773866	7.69E-05	0.002374675	270.1240014	67.29854033	Downregulated
Nxpe3	-1.781526188	-3.92254911	8.76E-05	0.002659521	171.0865151	39.20397372	Downregulated
Cyp26a1	-2.223278767	-3.893958041	9.86E-05	0.002933136	23.79322551	2.444860708	Downregulated
Atp6v0d2	-1.515632401	-3.881127068	0.000103973	0.003069775	108.2061159	32.90161508	Downregulated
Kng2	-1.588216751	-3.8723288	0.0001078	0.003165465	152.791307	43.67930449	Downregulated

Aqp9	-2.123404722	-3.86729935	0.000110047	0.0032256	120.2598349	15.7304918	Downregulated
Gng4	-1.89419115	-3.859440684	0.000113647	0.00329099	29.22817806	5.578731455	Downregulated
Ank1	-1.822575499	-3.855170828	0.000115649	0.003323674	384.5357742	82.62833044	Downregulated
Gbx2	-1.976219627	-3.841435979	0.000122317	0.003490547	32.20993783	5.577881584	Downregulated
Grem2	-1.639423138	-3.837704509	0.00012419	0.003531566	45.46371742	12.1168262	Downregulated
Acrv1	-1.944812643	-3.818019196	0.000134527	0.003805507	42.87041514	7.486812189	Downregulated
Ndst4	-2.367515172	-3.817101605	0.000135029	0.003813028	13.91737266	0.287831628	Downregulated
Ptprr	-1.605971486	-3.800592925	0.00014435	0.004048051	87.5583378	24.17825382	Downregulated
Nptx1	-1.967542579	-3.788952576	0.000151284	0.004206104	45.84017285	7.625716812	Downregulated
Pbsn	1.975525237	3.781346482	0.000155982	0.004321912	44.98165393	263.2855436	Upregulated
Neb	-1.969082854	-3.771588815	0.000162211	0.004434076	169.8986268	28.52960872	Downregulated
Arnt2	-1.635262374	-3.758642273	0.000170838	0.004616664	157.1465851	41.52705181	Downregulated
Nefm	-2.111093805	-3.744767619	0.000180561	0.004829555	36.59318138	4.429858132	Downregulated
Gpr75	2.010836654	3.742524009	0.000182181	0.00484889	10.72544194	64.69888317	Upregulated
Pcdhb3	-1.514663012	-3.73342808	0.000188891	0.005002838	44.37025091	13.52786012	Downregulated
Trim50	-2.328187863	-3.732818	0.000189349	0.005006794	7.819411549	0	Downregulated
Srd5a2	-2.185883352	-3.696618018	0.000218491	0.005636061	10.27934471	0.827914663	Downregulated
Edn3	-1.754078772	-3.685040266	0.000228666	0.005846144	57.48262702	12.83384727	Downregulated
Nrk	-2.108807603	-3.682905253	0.000230591	0.005886059	15.02642691	1.645070273	Downregulated
Dock3	-1.65264794	-3.677601915	0.000235437	0.005990893	82.4256282	21.04354998	Downregulated
Azgp1	1.51724685	3.621312526	0.000293112	0.007176821	187.6316193	627.3421566	Upregulated
Cnnm1	-2.150080683	-3.610843369	0.000305203	0.00744794	34.60845066	3.013067971	Downregulated
Sybu	-1.535650248	-3.606609608	0.000310224	0.007527572	59.24095577	17.0404281	Downregulated
Naip7	-2.238167091	-3.585519599	0.000336408	0.008042527	6.432286543	0	Downregulated
Gm17727	-2.227240564	-3.572265844	0.000353906	0.008386638	14.62272799	0.287831628	Downregulated
Tmem132b	-2.048615081	-3.570428923	0.000356397	0.008433345	23.58740666	2.785637731	Downregulated
A630076J17Rik	-2.038997155	-3.563335587	0.000366172	0.008589411	11.24605523	1.403577919	Downregulated
Hoxd3	-1.56856075	-3.5613228	0.000368991	0.00864303	232.4373515	64.61621023	Downregulated
Irg1	1.538231428	3.554015475	0.000379397	0.008823019	61.27688041	213.7916692	Upregulated
Sstr2	-1.504584217	-3.54249599	0.000396359	0.00913882	26.86699668	8.093902733	Downregulated
Adtrp	-1.823404685	-3.538613797	0.000402234	0.009221795	44.25574277	8.528094977	Downregulated
4930426D05Rik	-2.199706078	-3.52288219	0.000426881	0.00965037	17.22343105	0	Downregulated
Cdh16	-2.1150995	-3.500716363	0.000464009	0.010317049	40.64329358	3.279381492	Downregulated
Defb11	-2.179489701	-3.491475805	0.00048036	0.010486163	18.31455166	0	Downregulated
Cpn1	-1.628404893	-3.475403186	0.000510086	0.011036718	38.55851263	9.764530845	Downregulated
Dscaml1	-1.563884584	-3.439751836	0.000582248	0.012272633	26.38440425	7.071571662	Downregulated
Eddm3b	-2.141021716	-3.435041313	0.000592463	0.012423339	107.5460659	0.263010461	Downregulated
Galnt9	-1.606974075	-3.415562012	0.000636505	0.013159586	53.08362693	13.61381934	Downregulated
Erc2	-1.624151157	-3.410030257	0.000649557	0.013378227	21.2105015	5.219739385	Downregulated
9430037G07Rik	-1.586911598	-3.402077102	0.000668758	0.013669474	238.2140539	63.18879099	Downregulated
Bcat1	-1.667859501	-3.372171014	0.000745781	0.01489111	36.02391493	8.493364628	Downregulated
Lao1	-2.087655504	-3.362270198	0.000773044	0.015384975	13.00504328	0.550842089	Downregulated
Calb2	-2.099221479	-3.360608282	0.000777771	0.015410645	6.77304514	0	Downregulated
Umod	-1.911036527	-3.330906822	0.000865636	0.016723587	11.80007639	1.659132387	Downregulated
Sost	-2.074007766	-3.329125786	0.00087119	0.016790876	143.3568379	0.789031382	Downregulated
Nup62cl	-1.578711119	-3.328134714	0.000874296	0.016830713	21.8841905	5.816920748	Downregulated
Hndl	-1.624488627	-3.315419421	0.000915057	0.017470155	29.64753045	7.251925956	Downregulated
2700089I24Rik	-2.061910668	-3.30556252	0.000947486	0.017906591	11.50075142	0	Downregulated
Cyp4a29-ps	1.592014406	3.305786693	0.000947102	0.017906591	10.4119867	40.46789358	Upregulated
Gc	-2.053913191	-3.294623945	0.000985535	0.018393587	12.96519748	0	Downregulated
Cyp2c65	-1.893822122	-3.271900531	0.001068272	0.019609981	15.89323971	2.220733529	Downregulated
Apod	1.615407701	3.268405326	0.001081554	0.019808928	1940.623378	7761.948731	Upregulated
Nppc	-2.032417	-3.263719703	0.001099599	0.020048818	7.634898913	0.287831628	Downregulated
Ak7	-1.645363717	-3.243903936	0.001179035	0.021070234	17.69895811	4.114752148	Downregulated
Cacna2d3	-1.993448022	-3.242408775	0.001185239	0.021134804	8.454732727	0.575663256	Downregulated
Gm4952	-1.760252962	-3.238159161	0.001203037	0.021358185	19.08833977	3.514267724	Downregulated
Lrat	-1.553097078	-3.224417817	0.001262291	0.022239643	68.36885018	18.3721089	Downregulated
Olfr701	-1.998089148	-3.20476609	0.001351723	0.023383218	8.762695969	0	Downregulated
Pla2g12b	-1.942742786	-3.199141914	0.001378373	0.023717673	9.084711305	0.813852549	Downregulated
Asb5	-1.713728892	-3.178255006	0.001481644	0.024964619	18.61582048	3.812858406	Downregulated
A2m	-1.73232152	-3.173805584	0.001504544	0.025245506	493.2776769	96.20224596	Downregulated
Dmbt1	-1.821610508	-3.157209164	0.00159287	0.026399629	20917.28739	3234.311393	Downregulated
Kcnip1	-1.823462934	-3.142342841	0.001676017	0.027428221	26.330505	3.812858406	Downregulated
1500009C09Rik	-1.795450896	-3.139220857	0.001693977	0.027623417	25.36366521	4.128814262	Downregulated
Acta1	-1.763170064	-3.120981067	0.001802496	0.029071305	1576.098882	275.84334	Downregulated
Pcp4	-1.804807226	-3.112592759	0.001854517	0.029615636	695.7189622	107.4349497	Downregulated
Pcp4l1	-1.532489669	-3.111384299	0.001862124	0.029678636	154.8105195	41.04076404	Downregulated
Dscam	-1.520731828	-3.109072386	0.001876757	0.029794671	15.04600423	4.150332369	Downregulated

Akr1cl	-1.92527718	-3.087718475	0.002016994	0.031436023	31.41608869	0.564904203	Downregulated
Dmrt1	-1.84316377	-3.085604521	0.002031388	0.031592651	13.0825465	1.680650494	Downregulated
Sgca	-1.742870928	-3.085384544	0.002032891	0.031592651	27.3125408	4.750816792	Downregulated
Reg3a	-1.90040849	-3.083142463	0.002048271	0.03164959	10.70206783	0.827914663	Downregulated
Defb15	-1.918300894	-3.081533953	0.00205937	0.031790787	25.20225791	0.277072575	Downregulated
Slc13a2	-1.695760047	-3.071091062	0.002132781	0.032582701	14.37894594	2.760816564	Downregulated
Mfi2	-1.863916569	-3.057473218	0.002232116	0.033708333	11.58296459	1.151326512	Downregulated
BC100530	1.664924926	3.057287848	0.002233497	0.033708333	20.92718647	98.41868943	Upregulated
Musk	-1.909669304	-3.056927811	0.002236181	0.033717453	9.727097848	0.277072575	Downregulated
Cln1	-1.850011623	-3.050183619	0.002287015	0.034284764	20.52984071	2.206671415	Downregulated
Sphkap	-1.795100339	-3.041822029	0.002351509	0.034968446	7.94258121	1.115746291	Downregulated
March4	-1.744609755	-3.037820212	0.002382961	0.035274349	12.95975611	2.142966966	Downregulated
Col26a1	-1.774750902	-3.017345938	0.002549986	0.037169718	17.17122792	2.483743989	Downregulated
Hcn1	-1.658798036	-3.000607717	0.002694414	0.038821122	10.7428937	2.206671415	Downregulated
Tmem132d	-1.861099016	-2.981192633	0.002871281	0.040505306	6.460652448	0.287831628	Downregulated
Klh14	-1.851861459	-2.980026609	0.002882233	0.040589159	7.253843578	0	Downregulated
1810020O05Rik	-1.827267275	-2.980031045	0.002882192	0.040589159	8.836499359	0.831217724	Downregulated
Pzp	-1.833564961	-2.974672568	0.002933014	0.041090086	9.536432542	0.863494884	Downregulated
Guca2b	-1.754095966	-2.969271621	0.002985066	0.041713098	14.94993606	2.171091194	Downregulated
Atp2b3	-1.731194553	-2.951966793	0.003157569	0.043484311	28.35865473	4.438163997	Downregulated
Unc5c	-1.566524926	-2.913153205	0.00357799	0.04785119	17.32340045	4.147029308	Downregulated
Gng13	-1.663641428	-2.911731332	0.003594316	0.047950844	10.78620516	1.92959884	Downregulated
Cwh43	-1.508684779	-2.911985804	0.00359139	0.047950844	928.2620513	240.3562791	Downregulated
Tfr2	-1.57799545	-2.903104412	0.003694834	0.048770007	11.00384609	2.497806103	Downregulated

Supplemental Table S2. Top canonical pathways identified in IPA

Ingenuity Canonical Pathways	-log(p-value)	p-value	Ratio	Molecules
Role of Osteoblasts, Osteoclasts and Chondrocytes in Rheumatoid Arthritis	5.54	2.884E-06	0.0819	BMP15,SFRP4,BGLAP,SPP1,FRZB,BMP3,PIK3R5,WNT16,BMPR2,DKKL1,HNF1A,WNT7A,IGF1,FGFR4,SFRP5,SOST,Tcf7,ALPL,IL11
Hepatic Fibrosis / Hepatic Stellate Cell Activation	3.92	0.00012023	0.0765	COL1A2,COL8A2,IL4R,COL5A2,VCAM1,IGF1,TIMP1,COL23A1,COL12A1,COL24A1,A2M,AGRTR1,PGF,COL3A1
FXR/RXR Activation	3.08	0.00083176	0.0794	KNG1,TTR,PKLR,NR112,APOF,FGFR4,FBP1,HNF4A,HNF1A,APOD
Coagulation System	2.88	0.00131826	0.143	KNG1,PROC,PLAU,BDKRB1,A2M
Basal Cell Carcinoma Signaling	2.81	0.00154882	0.0972	BMP15,WNT7A,GLIS1,BMP3,WNT16,HNF1A,Tcf7
Human Embryonic Stem Cell Pluripotency	2.67	0.00213796	0.0699	BMP15,WNT7A,NTRK3,BMP3,FGFR4,PIK3R5,WNT16,BMPR2,HNF1A,Tcf7
Role of Macrophages, Fibroblasts and Endothelial Cells in Rheumatoid Arthritis	2.53	0.00295121	0.0518	SFRP4,SELE,VCAM1,PRKCQ,FRZB,PIK3R5,WNT16,DKKL1,HNF1A,PGF,WNT7A,FGFR4,PLCB1,SFRP5,SOST,Tcf7
Intrinsic Prothrombin Activation Pathway	2.34	0.00457088	0.138	COL1A2,KNG1,PROC,COL3A1
Eicosanoid Signaling	2.3	0.00501187	0.0896	PLA2G2F,PLA2G2D,ALOX5AP,PTGS2,PTGDS,GGT1
Axonal Guidance Signaling	2.27	0.00537032	0.0445	GNG4,PAPP2A,BMP15,PRKCQ,BMP3,PIK3R5,WNT16,SLT2,PGF,WNT7A,ADAM12,IGF1,NTRK3,GLIS1,FGFR4,PLCB1,SEMA4G,ADAM23,RTN4R,UNC5C
y-glutamyl Cycle	2.23	0.00588844	0.188	CHAC1,GGT1,GGT7
Wnt/β-catenin Signaling	2.15	0.00707946	0.0592	SFRP4,WNT7A,FRZB,WNT16,BMPR2,SFRP5,DKKL1,SOX11,HNF1A,Tcf7
Chondroitin and Dermatan Biosynthesis	2.11	0.00776247	0.333	CHSY3,CSGALNACT1
Role of NANOG in Mammalian Embryonic Stem Cell Pluripotency	2.07	0.00851138	0.0656	LIFR,BMP15,WNT7A,BMP3,FGFR4,PIK3R5,WNT16,BMPR2
Histamine Degradation	2.02	0.00954993	0.158	ALDH1L1,HNMT,ALDH1L2
VDR/RXR Activation	1.99	0.01023293	0.0769	CXCL10,BGLAP,SPP1,PRKCQ,TRPV6,TRPV5
Atherosclerosis Signaling	1.97	0.01071519	0.063	COL1A2,VCAM1,SELE,PLA2G2F,PLA2G2D,APOF,COL3A1,APOD
Maturity Onset Diabetes of Young (MODY) Signaling	1.9	0.01258925	0.143	PKLR,HNF4A,HNF1A
Endothelin-1 Signaling	1.86	0.01380384	0.0535	PRKCQ,PLA2G2F,GUCY2C,PLA2G2D,FGFR4,CASQ1,SHC2,PIK3R5,PLCB1,PTGS2
Superoxide Radicals Degradation	1.85	0.01412538	0.25	GPX7,SOD3
Sphingomyelin Metabolism	1.85	0.01412538	0.25	SGMS2,SMPSD3
Thyroid Cancer Signaling	1.84	0.01445444	0.1	NTRK3,RET,HNF1A,Tcf7
Fatty Acid α-oxidation	1.84	0.01445444	0.136	ALDH1L1,ALDH1L2,PTGS2
Agranulocyte Adhesion and Diapedesis	1.83	0.01479108	0.0529	CXCL10,VCAM1,SELE,PODXL2,CLDN15,CXCL14,CLDN2,CLDN14,ACTA1,Cdc9
IL-17 Signaling	1.81	0.01548817	0.0706	CXCL10,TIMP1,FGFR4,PIK3R5,MUC5B,PTGS2
Melatonin Degradation I	1.81	0.01548817	0.0806	CYP4F8,CYP2C9,CYP2A6 (includes others),CSGALNACT1,SULT1B1
Role of Pattern Recognition Receptors in Recognition of Bacteria and Viruses	1.79	0.0162181	0.0584	Oas1h,PRKCQ,FGFR4,Oas1b,PIK3R5,CLEC6A,NLRC4,IL11
Nitric Oxide Signaling in the Cardiovascular System	1.75	0.01778279	0.0619	KNG1,PRKCQ,GUCY2C,FGFR4,PIK3R5,PDE1A,PGF
VEGF Family Ligand-Receptor Interactions	1.75	0.01778279	0.0682	PRKCQ,PLA2G2F,PLA2G2D,FGFR4,PIK3R5,PGF
Sphingosine and Sphingosine-1-phosphate Metabolism	1.75	0.01778279	0.222	ACER2,SGPP2
Prostanoid Biosynthesis	1.75	0.01778279	0.222	PTGS2,PTGDS
PXR/RXR Activation	1.73	0.01862087	0.0769	NR12,CYP2C9,CYP2A6 (includes others),HNF4A,HMGCS2
Uroporphyrin Degradation	1.69	0.02041738	0.12	CYP4F8,CYP2C9,CYP2A6 (includes others)
Tryptophan Degradation X (Mammalian, via Tryptamine)	1.69	0.02041738	0.12	ALDH1L1,ALDH1L2,DDC
Ethanol Degradation IV	1.69	0.02041738	0.12	ALDH1L1,ALDH1L2,GPX7
Superpathway of Melatonin Degradation	1.68	0.02089296	0.0746	CYP4F8,CYP2C9,CYP2A6 (includes others),CSGALNACT1,SULT1B1
Ovarian Cancer Signaling	1.67	0.02137962	0.0556	WNT7A,FGFR4,PIK3R5,WNT16,PTGS2,HNF1A,Tcf7,PGF
Factors Promoting Cardiogenesis in Vertebrates	1.66	0.02187762	0.0652	BMP15,PRKCQ,BMP3,BMPR2,HNF1A,Tcf7
Pregnenolone Biosynthesis	1.66	0.02187762	0.2	CYP26A1,CYP4F11
Glycolysis I	1.64	0.02290868	0.115	PKLR,FBP1,BPGM
Sorbitol Degradation I	1.63	0.02344229	1	SORD
Methylglyoxal Degradation VI	1.63	0.02344229	1	LDHD
L-cysteine Degradation II	1.63	0.02344229	1	CTH
Acetone Degradation I (to Methylglyoxal)	1.6	0.02511886	0.111	CYP4F8,CYP2C9,CYP2A6 (includes others)
Leukocyte Extravasation Signaling	1.55	0.02818383	0.0476	VCAM1,PRKCQ,CLDN15,TIMP1,FGFR4,PIK3R5,CLDN2,BMX,CLDN14,ACTA1
Acyl-CoA Hydrolysis	1.5	0.03162278	0.167	Ces1e,HNF4A
Antiproliferative Role of Somatostatin Receptor 2	1.49	0.03235937	0.0667	GNG4,GUCY2C,SSTR2,FGFR4,PIK3R5
CCR3 Signaling in Eosinophils	1.46	0.03467369	0.0538	GNG4,PRKCQ,PLA2G2F,PLA2G2D,FGFR4,PIK3R5,PLCB1
p70S6K Signaling	1.44	0.03630781	0.0534	IL4R,PRKCQ,FGFR4,MAPT,PIK3R5,PLCB1,AGTR1
Histidine Degradation VI	1.44	0.03630781	0.154	CYP26A1,CYP4F11
Gαq Signaling	1.44	0.03630781	0.05	AGTR1
Nicotine Degradation III	1.41	0.03890451	0.0741	CYP4F8,CYP2C9,CYP2A6 (includes others),CSGALNACT1
Superpathway of Methionine Degradation	1.41	0.03890451	0.0938	PRMT8,CD01,CTH
Mouse Embryonic Stem Cell Pluripotency	1.4	0.03981072	0.0566	LIFR,FGFR4,PIK3R5,BMPR2,HNF1A,Tcf7
Xenobiotic Metabolism Signaling	1.39	0.04073803	0.0418	GSTA3,Ces1e,ALDH1L1,CES1,PRKCQ,ALDH1L2,NR1I2,FGFR4,PIK3R5,CYP2C9,SULT1B1,SOD3
Leukotriene Biosynthesis	1.38	0.04168694	0.143	GGT1,GGT7
Glycogen Degradation III	1.38	0.04168694	0.143	PYGL,MGAM
MIF-mediated Glucocorticoid Regulation	1.37	0.04265795	0.0909	PLA2G2F,PLA2G2D,PTGS2
Growth Hormone Signaling	1.37	0.04265795	0.0617	PRKCQ,IGF1,FGFR4,PIK3R5,A2M
Taurine Biosynthesis	1.33	0.04677351	0.5	CDO1
Cysteine Biosynthesis/Homocysteine Degradation	1.33	0.04677351	0.5	CTH
Vitamin-C Transport	1.32	0.04786301	0.133	SLC23A1,GLRX
Amyotrophic Lateral Sclerosis Signaling	1.32	0.04786301	0.0541	IGF1,FGFR4,PIK3R5,NEFH,GRIK2,PGF
Dopamine Degradation	1.31	0.04897788	0.0857	ALDH1L1,ALDH1L2,SULT1B1
Gap Junction Signaling	1.31	0.04897788	0.0471	BGLAP,PRKCQ,HTR2B,GUCY2C,FGFR4,PIK3R5,PLCB1,ACTA1

Supplemental Table S3. Top Putative Master Regulators Identified in IPA

PPIF	-0.102	enzyme	ITGB3,PPIF,STAT3		2	Activated	biased	3.772	4.87E-07	1.15E-02	A2M,Cd9,CEACAM1,CD1A2,CD3A1,CXCL10,CYP26A1,EGR2,FST,GBP6,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,ODAM,PDK4,PLA,U,PTG52,REG3A,SPARC,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	31 (3)	3
GEM	-0.781	enzyme	Akt,CREB1,GEM,Hsp27,MAPKAPK2		2		biased	0.16	5.15E-07	8.50E-03	A2M,ADM,BMP4,CA11,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL11,DEGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	39 (5)	4
PANX3	0.085	transporter	Creb,CREB1,PANX3		2		biased	0.333	5.34E-07	3.00E-03	A2M,ADM,CAU1,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	36 (3)	2
halothane		chemical drug	ATP2A2,CREB1,halothane,KCNK2,KCN9		2			0.707	5.47E-07	1.70E-03	A2M,ADM,CAU1,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	32 (5)	4
MYOCD	-0.346	transcription regulator	FOS,ITGAM,MYOCD,PTK2,RUNX2,SRF		3	Inhibited	biased	-2.744	5.75E-07	1.04E-02	A2M,ADM,CAU1,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	34 (6)	6
MAP2	0.058	other	Creb,CREB1,MAP2		2		biased	-0.333	6.02E-07	3.20E-03	A2M,ADM,CAU1,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	36 (3)	2
methamphetamine		chemical drug	CAV1,CREB1,ELK1,ERK,MAPK1,MAPK3,methamphetamine,MMP9,PARP1,SLC18A2		2			-0.283	6.02E-07	3.65E-03	A2M,ADM,CAU1,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	50 (10)	10
4-nonylphenol		chemical toxicant	4-nonylphenol,CREB1,LPL		2			-0.18	6.13E-07	1.50E-03	A2M,ADM,CAU1,CLMP,CD1A2,CD3A1,COL2A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	31 (3)	3
GLP-1 (7-34)-amide		chemical drug	AI,ALAMP1,Creb,CREB1,GCG,GLP-1 (7-34)-amide;No5,NCNA5,Plk4		2			0.283	6.59E-07	3.28E-03	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	50 (9)	9
LiF	0.122	cytokine	LiF		1			0.728	6.65E-07	1.10E-03	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	37 (1)	1
CCDC6	-0.254	other	CCDC6,CREB1,PTEN		2			0.762	7.28E-07	1.31E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	43 (3)	2
SRF	-0.027	transcription regulator	FOS,ITGAM,PTK2,RUNX2,SRF		2	Inhibited	biased	-2.828	7.44E-07	1.06E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	32 (5)	5
NEK6	-0.525	kinase	NEK6,RP56KB1,SGK1,STAT3		2	Inhibited	biased	-4.382	7.48E-07	1.74E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	30 (4)	4
xestospongin C		chemical - endogenous	CREB1,NFKB (complex),xestospongin C		2		biased	1.474	7.83E-07	3.94E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	46 (3)	2
FGF1	0.342	growth factor	FGF1		1			1.604	8.04E-07	5.00E-04	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	14 (1)	1
ciprofibrate		chemical drug	ACOX1,CAT,ciprofibrate,GST,PPARA		2			-0.707	8.12E-07	1.53E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	32 (5)	5
SK & F 86002		chemical - kinase inhib	Ap1,ATF2,P38 MAPK,5& F 86002,TP73		2		biased	1.667	8.23E-07	2.48E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	36 (5)	4
PKIA	-0.044	other	CREB1,Pka,PKA,PRKACA		2		biased	-0.174	8.82E-07	4.00E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	33 (4)	4
RARB	-0.036	ligand-dependent nuc	Ap1,CEBPB,FOS,JUN,RARB		2	Activated	biased	2.655	9.68E-07	4.50E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	41 (5)	5
PPME1	0.171	enzyme	APP,ERK1,ERK,Me6,PPME1		2	Inhibited	biased	-3.042	1.07E-06	4.11E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	39 (5)	4
WWP1	-0.171	enzyme	ERBB4,JUNB,KLF2,KLF5,RUNX2,SMAD2,TGFBR1,TP73,WWP1		2		biased	0.333	1.16E-06	2.11E-02	A2M,ADM,ACTA1,ADM,CAU1,CLMP,CD1A2,CD3A1,Crisp1,Crisp3,CXCL10,EGR2,ERCR2,GFAP,HDXO8,ITGB3,JIL1,4RL,DH9,PDR2,Mx2,Mx2,MN3,NCNA1,NCNA2,NP16,AP1,TAZ,NA41,NA43,PCD20,PO4,PAU,PRM16,PTG52,PTPRR,REGR,RET,RGS16,PTPRR,REGR,RS2,PTPRR,SELE,SEPRIN,SEPRIN3g (includes others),SOST,SPARC,SPARC1,TCCHC11	36 (9)	8
desmopressin		biologic drug	ADCY,CTNNB1,desmopressin,MAPK1,MAPK3,NFAT5,Pk4,SLC9A3		2			-0.949	1.23E-06	3.83E-02	A2M,ADM,ACTA1,ADM,APL6,AGLAP,CD1A2,CD3A1,COL2A1,COL3A1,COL4A1,COL5A1,COL6A1,COL7A1,COL8A1,COL9A1,COL10A1,COL11A1,COL12A1,COL13A1,COL14A1,COL15A1,COL16A1,COL17A1,COL18A1,COL19A1,COL20A1,COL21A1,COL22A1,COL23A1,COL24A1,COL25A1,COL26A1,COL27A1,COL28A1,COL29A1,COL30A1,COL31A1,COL32A1,COL33A1,COL34A1,COL35A1,COL36A1,COL37A1,COL38A1,COL39A1,COL40A1,COL41A1,COL42A1,COL43A1,COL44A1,COL45A1,COL46A1,COL47A1,COL48A1,COL49A1,COL50A1,COL51A1,COL52A1,COL53A1,COL54A1,COL55A1,COL56A1,COL57A1,COL58A1,COL59A1,COL60A1,COL61A1,COL62A1,COL63A1,COL64A1,COL65A1,COL66A1,COL67A1,COL68A1,COL69A1,COL70A1,COL71A1,COL72A1,COL73A1,COL74A1,COL75A1,COL76A1,COL77A1,COL78A1,COL79A1,COL80A1,COL81A1,COL82A1,COL83A1,COL84A1,COL85A1,COL86A1,COL87A1,COL88A1,COL89A1,COL90A1,COL91A1,COL92A1,COL93A1,COL94A1,COL95A1,COL96A1,COL97A1,COL98A1,COL99A1,COL100A1,COL101A1,COL102A1,COL103A1,COL104A1,COL105A1,COL106A1,COL107A1,COL108A1,COL109A1,COL110A1,COL111A1,COL112A1,COL113A1,COL114A1,COL115A1,COL116A1,COL117A1,COL118A1,COL119A1,COL120A1,COL121A1,COL122A1,COL123A1,COL124A1,COL125A1,COL126A1,COL127A1,COL128A1,COL129A1,COL130A1,COL131A1,COL132A1,COL133A1,COL134A1,COL135A1,COL136A1,COL137A1,COL138A1,COL139A1,COL140A1,COL141A1,COL142A1,COL143A1,COL144A1,COL145A1,COL146A1,COL147A1,COL148A1,COL149A1,COL150A1,COL151A1,COL152A1,COL153A1,COL154A1,COL155A1,COL156A1,COL157A1,COL158A1,COL159A1,COL160A1,COL161A1,COL162A1,COL163A1,COL164A1,COL165A1,COL166A1,COL167A1,COL168A1,COL169A1,COL170A1,COL171A1,COL172A1,COL173A1,COL174A1,COL175A1,COL176A1,COL177A1,COL178A1,COL179A1,COL180A1,COL181A1,COL182A1,COL183A1,COL184A1,COL185A1,COL186A1,COL187A1,COL188A1,COL189A1,COL190A1,COL191A1,COL192A1,COL193A1,COL194A1,COL195A1,COL196A1,COL197A1,COL198A1,COL199A1,COL200A1,COL201A1,COL202A1,COL203A1,COL204A1,COL205A1,COL206A1,COL207A1,COL208A1,COL209A1,COL210A1,COL211A1,COL212A1,COL213A1,COL214A1,COL215A1,COL216A1,COL217A1,COL218A1,COL219A1,COL220A1,COL221A1,COL222A1,COL223A1,COL224A1,COL225A1,COL226A1,COL227A1,COL228A1,COL229A1,COL230A1,COL231A1,COL232A1,COL233A1,COL234A1,COL235A1,COL236A1,COL237A1,COL238A1,COL239A1,COL240A1,COL241A1,COL242A1,COL243A1,COL244A1,COL245A1,COL246A1,COL247A1,COL248A1,COL249A1,COL250A1,COL251A1,COL252A1,COL253A1,COL254A1,COL255A1,COL256A1,COL257A1,COL258A1,COL259A1,COL260A1,COL261A1,COL262A1,COL263A1,COL264A1,COL265A1,COL266A1,COL267A1,COL268A1,COL269A1,COL270A1,COL271A1,COL272A1,COL273A1,COL274A1,COL275A1,COL276A1,COL277A1,COL278A1,COL279A1,COL280A1,COL281A1,COL282A1,COL283A1,COL284A1,COL285A1,COL286A1,COL287A1,COL288A1,COL289A1,COL290A1,COL291A1,COL292A1,COL293A1,COL294A1,COL295A1,COL296A1,COL297A1,COL298A1,COL299A1,COL300A1,COL301A1,COL302A1,COL303A1,COL304A1,COL305A1,COL306A1,COL307A1,COL308A1,COL309A1,COL310A1,COL311A1,COL312A1,COL313A1,COL314A1,COL315A1,COL316A1,COL317A1,COL318A1,COL319A1,COL320A1,COL321A1,COL322A1,COL323A1,COL324A1,COL325A1,COL326A1,COL327A1,COL328A1,COL329A1,COL330A1,COL331A1,COL332A1,COL333A1,COL334A1,COL335A1,COL336A1,COL337A1,COL338A1,COL339A1,COL340A1,COL341A1,COL342A1,COL343A1,COL344A1,COL345A1,COL346A1,COL347A1,COL348A1,COL349A1,COL350A1,COL351A1,COL352A1,COL353A1,COL354A1,COL355A1,COL356A1,COL357A1,COL358A1,COL359A1,COL360A1,COL361A1,COL362A1,COL363A1,COL364A1,COL365A1,COL366A1,COL367A1,COL368A1,COL369A1,COL370A1,COL371A1,COL372A1,COL373A1,COL374A1,COL375A1,COL376A1,COL377A1,COL378A1,COL379A1,COL380A1,COL381A1,COL382A1,COL383A1,COL384A1,COL385A1,COL386A1,COL387A1,COL388A1,COL389A1,COL390A1,COL391A1,COL392A1,COL393A1,COL394A1,COL395A1,COL396A1,COL397A1,COL398A1,COL399A1,COL400A1,COL401A1,COL402A1,COL403A1,COL404A1,COL405A1,COL406A1,COL407A1,COL408A1,COL409A1,COL410A1,COL411A1,COL412A1,COL413A1,COL414A1,COL415A1,COL416A1,COL417A1,COL418A1,COL419A1,COL420A1,COL421A1,COL422A1,COL423A1,COL424A1,COL425A1,COL426A1,COL427A1,COL428A1,COL429A1,COL430A1,COL431A1,COL432A1,COL433A1,COL434A1,COL435A1,COL436A1,COL437A1,COL438A1,COL439A1,COL440A1,COL441A1,COL442A1,COL443A1,COL444A1,COL445A1,COL446A1,COL447A1,COL448A1,COL449A1,COL450A1,COL451A1,COL452A1,COL453A1,COL454A1,COL455A1,COL456A1,COL457A1,COL458A1,COL459A1,COL460A1,COL461A1,COL462A1,COL463A1,COL464A1,COL465A1,COL466A1,COL467A1,COL468A1,COL469A1,COL470A1,COL471A1,COL472A1,COL473A1,COL474A1,COL475A1,COL476A1,COL477A1,COL478A1,COL479A1,COL480A1,COL481A1,COL482A1,COL483A1,COL484A1,COL485A1,COL486A1,COL487A1,COL488A1,COL489A1,COL490A1,COL491A1,COL492A1,COL493A1,COL494A1,COL495A1,COL496A1,COL497A1,COL498A1,COL499A1,COL500A1,COL501A1,COL502A1,COL503A1,COL504A1,COL505A1,COL506A1,COL507A1,COL508A1,COL509A1,COL510A1,COL511A1,COL512A1,COL513A1,COL514A1,COL515A1,COL516A1,COL517A1,COL518A1,COL519A1,COL520A1,COL521A1,COL522A1,COL523A1,COL524A1,COL525A1,COL526A1,COL527A1,COL528A1,COL529A1,COL530A1,COL531A1,COL532A1,COL533A1,COL534A1,COL535A1,COL536A1,COL537A1,COL538A1,COL539A1,COL540A1,COL541A1,COL542A1,COL543A1,COL544A1,COL545A1,COL546A1,COL547A1,COL548A1,COL549A1,COL550A1,COL551A1,COL552A1,COL553A1,COL554A1,COL555A1,COL556A1,COL557A1,COL558A1,COL559A1,COL560A1,COL561A1,COL562A1,COL563A1,COL564A1,COL565A1,COL566A1,COL567A1,COL568A1,COL569A1,COL570A1,COL571A1,COL572A1,COL573A1,COL574A1,COL575A1,COL576A1,COL577A1,COL578A1,COL579A1,COL580A1,COL581A1,COL582A1,COL583A1,COL584A1,COL585A1,COL586A1,COL587A1,COL588A1,COL589A1,COL589A1,COL590A1,COL591A1,COL592A1,COL593A1,COL594A1,COL595A1,COL596A1,COL597A1,COL598A1,COL599A1,COL600A1,COL601A1,COL602A1,COL603A1,COL604A1,COL605A1,COL606A1,COL607A1,COL608A1,COL609A1,COL610A1,COL611A1,COL612A1,COL613A1,COL614A1,COL615A1,COL616A1,COL617A1,COL618A1,COL619A1,COL620A1,COL621A1,COL622A1,COL623A1,COL624A1,COL625A1,COL626A1,COL627A1,COL628A1,COL629A1,COL630A1,COL631A1,COL632A1,COL633A1,COL634A1,COL635A1		

pCPT-cAMP		chemical - kinase inhib	CAPN2,MAPK3,pCPT-cAMP,Pka,PTPN1,SGK1	2		-1.091	2.23E-06	4.80E-03	GFR,CXCL10,GFR,GRK2,HNF4A,IGF1,KCN1,CKNA2,Mx1/Mv2,MYRF,NRA1,OXTR,PKA,POU2AF1,PRDM16,RGS2,SLC1A1,SPPI1,TIMP1,TRP5,TRPV1	21 (6)	6	
vanillic acid		chemical - endogenous	NTSE,RELA,vanillic acid	2	Activated	biased	2.132	2.23E-06	1.04E-02	A2M,ALOX5AP,CFR,CCOL1A2,COL3A1,CXL10,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,TIMP1,VCAM1	22 (3)	3
TLE1	0.02	transcription regulator	CTNNB1,RUNQ2,TLE1	2	Activated	biased	3.8	2.29E-06	1.19E-02	A2M,ALOX5AP,CFR,CCOL1A2,COL3A1,CXL10,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,TIMP1,VCAM1	25 (3)	2
lithocholic acid		chemical - endogenous	EPHA2,HSD11B2,lithocholic acid,NR1I2,VDR	2		-1.342	2.30E-06	6.20E-03	A2M,ALOX5AP,CFR,CCOL1A2,COL3A1,CXL10,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,TIMP1,VCAM1	20 (5)	5	
SLC6A4	-0.617	transporter	5-hydroxytryptamine,SLC6A4,STAT3	2	Inhibited		-2.502	2.34E-06	2.33E-02	A2M,ALOX5AP,CFR,CCOL1A2,COL3A1,CXL10,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,TIMP1,VCAM1	27 (3)	2
NFKB1A	0.29	transcription regulator	NFKB1A	1	Inhibited		-2.2	2.41E-06	1.20E-02	A2M,ALOX5AP,CFR,CCOL1A2,COL3A1,CXL10,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,TIMP1,VCAM1	25 (1)	1
PD 144795		chemical - kinase inhib	Calneurin protein(s),PD 144795,RELA	2	Activated	biased	2.294	2.86E-06	1.58E-02	A2M,ALOX5AP,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	23 (3)	2
reserpine		chemical drug	ABCBS1,ABCBA4,NR1I2,reserpine,SLC18A2,SLC6A3	2		biased	-1.414	3.40E-06	4.30E-03	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	18 (6)	5
p38 Sapk	group	Ap1,ATF2,CREB1,ERK,MAPK14,p38 Sapk		2		-0.801	3.64E-06	3.23E-02	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	39 (6)	5	
DSP	0.037	other	DSP,HNF4A,LEF1	2		biased	-1	3.94E-06	1.38E-02	BIGAP,CALM4,CDH2,CEACAM1,COL1A2,COL3A1,CRL1,CYP29,DISP2,EIF5,EMX2,EPSPS3,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	25 (3)	3
FOXA1	0.391	transcription regulator	FOXA1,SHH	2		biased	-0.943	4.16E-06	5.00E-03	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	18 (2)	2
mediator	complex	CCNC,HNF4A,MED1,MED12,MED13,MED14,MED24,mediator		2		biased	-0.577	4.24E-06	1.79E-02	CALM4,CDH2,CEACAM1,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	27 (8)	7
FAM129B	0.106	other	CASP8,CTNNB1,FAM129B,HRS	2	Inhibited	biased	-2.475	4.29E-06	4.42E-02	CALM4,CDH2,CEACAM1,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	32 (4)	3
HNF4A	-1.985	transcription regulator	HNF4A	1		biased	-1.46	4.36E-06	9.40E-03	CALM4,CDH2,CEACAM1,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	23 (1)	1
HOXA10	0.176	transcription regulator	HOXA10	1		biased	0	4.63E-06	1.00E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	16 (1)	1
STAT6	0.176	transcription regulator	STAT6	1			-1.698	4.97E-06	8.60E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	17 (1)	1
TIP60	complex	EAT5,SOX9,TIP60,TP73		2	Inhibited		-2.414	5.25E-06	9.80E-03	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPARC,VCAM1	29 (4)	3
Tnfsf9	0.626	other	C/ebp,CREB1,Tnfsf9	2		biased	-0.557	5.25E-06	8.20E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	29 (3)	3
ERBB4	0.202	kinase	ERBB4	1			0.302	5.28E-06	1.50E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	11 (1)	1
4-tert-octylphenol	chemical toxicant	4-tert-octylphenol,CREB1		2		biased	-0.186	5.47E-06	6.80E-02	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	29 (2)	2
ethyl ether	chemical reagent	CREB1,ethyl ether,KCNK2		2		biased	0	5.53E-06	6.10E-03	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	28 (3)	2
ABCC4	-0.176	transporter	ABCC6,CREB1	2		biased	0	5.76E-06	6.20E-03	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	28 (2)	2
nadolol	chemical drug	ADR82,CREB1,nadolol		2		biased	0.557	5.93E-06	9.30E-03	ABCBS1,APOF,CES1,CH,CYP29,GRK5,INFA1,IGF1,NRA1,PAK2,PLAU,PTGS2,REG3A,SEL,SERPINE2,SPPI1,TACR1,VCAM1	29 (3)	2
tirofiban	chemical drug	ITGB3,MMP2,MMP9,NOS3,tirofiban		2			0.535	6.02E-06	5.80E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	14 (5)	4
AGT	-0.681	growth factor	AGT	1	Inhibited	biased	-2.117	6.28E-06	3.22E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	27 (1)	1
P2RY11	G-protein coupled rece	ADCY,ATF1,CREB1,GNAQ,P2RY11		2		biased	-0.557	6.43E-06	8.40E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	29 (5)	4
4-[(4'-chloro-2'-fluoro)phenylamino]-6,7-dimethoxyquinoxaline	chemical - kinase inhib	4-[(4'-chloro-2'-fluoro)phenylamino]-6,7-dimethoxyquinoxaline,BMX,KDR		2	Activated	biased	2.121	6.63E-06	1.10E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	8 (3)	2
5-O-mycetyl-beta-raf-(1<2>)-5-O-mycetyl-alpha-raf-(1<2>)-glycerol	chemical - endogenous	5-O-mycetyl-beta-raf-(1<2>)-5-O-mycetyl-alpha-raf-(1<2>)-glycerol		1	Inhibited	biased	-2.111	6.69E-06	2.20E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	11 (1)	1
Cg	complex	Cg		1	Inhibited	biased	-3.411	7.01E-06	1.64E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	22 (1)	1
RASA2	0.138	other	CREB1,Mapk,Ras,RASA2	2		biased	0.354	7.23E-06	2.01E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	32 (4)	3
GNAZ	-0.106	enzyme	Ah1,CREB1,ERK,GNAZ,RGS4	2			0.973	7.52E-06	4.05E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	38 (5)	4
oxotremorine	chemical drug	Muscarinic cholinergic receptor,oxotremorine,RELA		2	Inhibited	biased	-2.4	7.79E-06	2.47E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	21 (3)	2
omeprazole	chemical drug	ABCB1,AHR,C4A,CYP1A1,CYP1A2,CYP2C8,HDC,NR1I2,o		2			-0.365	8.21E-06	4.53E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	30 (10)	10
streptozocin	chemical drug	streptozocin		1			-0.5	8.94E-06	9.80E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	16 (1)	1
FOSL2	0.104	transcription regulator	Ap1,FOS,FOSL2,JUN,JUND	2	Activated	biased	2.414	9.19E-06	4.23E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	29 (5)	5
APBB1IP	-0.369	other	APBB1IP,ITGBM,ITGB2,ITGB3	2		biased	-1.508	9.39E-06	4.20E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	11 (4)	3
troleandomycin	chemical drug	ABCB1,ABCB4,NR1I2,troleandomycin		2	Inhibited	biased	-2	1.03E-05	5.00E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	16 (4)	3
miR-3584-5p (and other miRNAs w/seed GGAGGAG)	mature microRNA	miR-3584-5p (and other miRNAs w/seed GGAGGAG),TP73		2		biased	-0.853	1.11E-05	7.20E-03	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	22 (2)	2
polyphosphate	chemical - endogenous	polyphosphate		1	Inhibited	biased	-2	1.14E-05	3.00E-04	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	4 (1)	1
CCL17	-1.03	cytokine	ADRB2,CCL17,CREB1,PI3K (complex),RHOA,SRC	2			-1	1.27E-05	4.44E-02	ACTA1,ADOM,ALOX5AP,ALPL,BCHE,COH16,COLA1,EGR2,EMX2,FST,GS	36 (6)	5

ITGB3	-0.319	transmembrane receptor	ITGB3	1	biased	-1.134	1.96E-04	8.90E-03	CEACAM1,COL1A1,PLAU,SOST,SPARC,TIMP1	7 (1)	1	
KDR	-0.502	kinase	KDR	1	Inhibited	-2.236	1.96E-04	5.60E-02	A2M,NR4A1,PLAU,PTG52,SELE	5 (1)	1	
IL10RA	-0.29	transmembrane receptor	IL10RA	1		-1.606	1.96E-04	3.33E-02	ELA1,CTR,CLEC4N,CLUG,CSRP2,CTH,GPB6,MEP1A,PYGL,REG3A,REG5,RSAD2,SCIN,SerpinA3g (includes others),SerpinB1,SPARC,SPON1,TINAG,TRR	19 (1)	1	
MSK1/2	group	ATFL,Creb,Eif4EBP1,HMGN1,MSK1/2,RPS6KAS		2	biased	-1	2.01E-04	4.04E-02	AA55,ADM,ATGP2,COL1A1,FAF1,PTG52,SELE,PP2A,B55,SP1,TRIP10	16 (6)	5	
trans-(??)-nabilone	chemical drug	CNR1,CNR2,trans-(??)-nabilone		2	biased	-1.732	2.01E-04	2.52E-02	ADORA1,ALPL,BMP15,CEACAM1,CXCL10,GRK5,IGF1,PLAU,PTG52,S100	12 (3)	2	
BAY 38-7271	chemical drug	BAY 38-7271,CNR1,CNR2		2	biased	-1.732	2.01E-04	2.52E-02	ADORA1,ALPL,BMP15,CEACAM1,CXCL10,GRK5,IGF1,PLAU,PTG52,S100	12 (3)	2	
TSC2	0.082	other	TSC2	1	biased	1.897	2.08E-04	1.02E-02	A2M,CRP1,CRYAB,CXCL10,GFAF,HMGCS2,LDHB,TRK3,PKD4,SNAP1	10 (1)	1	
PTGFR	-0.973	G-protein coupled receptor	PTGFR	1	Inhibited	-2	2.08E-04	3.50E-03	ACTA1,NR4A1,OXTR,PTG52	4 (1)	1	
IL1RN	0.075	cytokine	IL1RN	1	biased	1.508	2.11E-04	2.81E-02	BDKRB1,CHAC1,IRIT3,IGF1,IL1R,NPV2R,PTG52,RSAD2,SELE,PP2A,B55,SP1,SOBO	11 (1)	1	
carbon tetrachloride	chemical toxicant	carbon tetrachloride		1	biased	-1.941	2.20E-04	4.56E-02	DMP3,COL2A1,COL3A1,CXCL10,FGF4,IGF1,MGLL,NR4A1,PTG52,SORO	13 (1)	1	
5-N-ethylcarboxamido adenosine	chemical reagent	S-N-ethylcarboxamido adenosine		1		-0.632	2.43E-04	1.94E-02	AD4A,CES1,COL1A2,EGFR2,JP173,KCN2A,NR4A1,NR4A3,NT5E,RGS2	10 (1)	1	
EZH2	0.37	transcription regulator	EZH2	1		0.577	2.44E-04	1.72E-02	ADOLSAO,ALPL,C15orf45,CDH3,HOXD3,IKB2,IL11,OXTR,PCDH20,PTG52,SP9A,SP9B	12 (1)	1	
CBX5	-0.132	transcription regulator	CBX5,KAT5,MYOD1	2	Activated	biased	2.236	2.54E-04	3.79E-02	ACTA1,C15orf48,COO1,CEACAM1,CYTB,CYTAB,FAM192B8,GRM2,IGF1,MAPT,MUCL3,NPTK1,PCPD4,PRDM16,PRDM2,SERPINA3,SGCA,SLC2A10,TNNC2	20 (3)	3
ZFP36L2	-0.26	transcription regulator	ZFP36L2	1	biased	-1.732	2.71E-04	1.10E-02	NEFH,Nefm,SCN8A	3 (1)	1	
WAC	0.106	other	WAC	1	biased	-1.732	2.71E-04	2.60E-02	ALPL,BGAP,PDME1,PTG52,SELE	3 (1)	1	
PTH	other	PTH		1	Inhibited	biased	-2.111	2.79E-04	2.32E-02	BIGLAP,COL2A1,EGFR2,IGF1,IL11,NR4A1,PLAU,PTG52,S057,SP91,WN71	11 (1)	1
CSHL1	-0.132	growth factor	CSHL1	1	biased	-1.134	2.84E-04	8.80E-03	ACTA1,CYP2C9,CYPd9 (includes others),HNF4A,IGF1,Pbrn,SSTR2	7 (1)	1	
FNDCS	0.583	other	FNDCS	1	biased	-1	2.86E-04	4.70E-02	ALPL,PRM016,S057,SP91	4 (1)	1	
NKX6-1	0.093	transcription regulator	NKX6-1	1		-1	2.86E-04	3.50E-02	INF1A,NR4A1,NR4A3,UNSC	4 (1)	1	
staurosporine	chemical - kinase inhibitor	staurosporine		1		-0.333	2.90E-04	3.15E-02	BIGLAP,COL2A1,EGFR2,IGF1,IL11,NR4A1,PLAU,SELE	9 (1)	1	
WSB1	0.257	enzyme	DI02,HIPK2,VHL,WSB1	2	Activated		2.309	2.95E-04	2.54E-02	ALDXAP,ANK1,AVIL,DGKG,GNG4,HNF1A,NEFH,Nefm,PRKB3,SPARC,S,TAZ,TRPM5	12 (4)	3
nicardipine	chemical drug	ADRA1B,CACNA1C,CYP2C8,nicardipine,NR1I2		2		-0.832	3.12E-04	4.39E-02	ACTA1,APOF,CES1,CTH,CYP2A6 (includes others),CYP2C9,Cypd9 (includes others),ELOVL6,HMGCS2,IGF1,Mup1 (includes others),PTG52,SELE	13 (5)	5	
IL6R	0.284	transmembrane receptor	IL6R	1	biased	-1.414	3.23E-04	2.43E-02	A2M,COL1A2,CXCL10,IGF1,PTG52,SEERIN4A3,SELE,VCAM1	8 (1)	1	
dimethylnitrosamine	chemical toxicant	dimethylnitrosamine		1	Inhibited	biased	-2.449	3.32E-04	1.17E-02	ALDXAP,ALPL,C15orf45,CXCL10,HOXD3,IKB2,IL11,OXTR,PCDH20,PTG52,SELE	6 (1)	1
S-nitrosoglutathione	chemical toxicant	S-nitrosoglutathione		1		-0.816	3.32E-04	1.77E-02	CXCL10,GFAP,IGF1,PTG52,SELE,VCAM1	6 (1)	1	
SOC51	0.305	other	SOC51	1	biased	0	3.55E-04	3.43E-02	A2M,CXCL10,Defb10/Dcb1,GB2,IGF1,IL11,NR4A1,PLAU,PTG52,SELE,VCAM1	10 (1)	1	
RASGRP2	-0.502	other	ELK1,ITGB1,ITGB2,RASGRP2	2		0.905	3.65E-04	4.34E-02	ACTA1,BDKRB1,BMP82,COL1A2,EGFR2,GFAP,PLAU,SP91,TP052,VCAM1	11 (4)	3	
noladin ether	chemical - endogenous	ADCY,CNR2,noladin ether,Pka		2	biased	1.508	3.65E-04	4.34E-02	COL3A1,CXCL10,GRK5,NF4A,IGF1,NR4A1,OXTR,KLRB1,PLAU,PTG52,SELE	11 (4)	3	
thiopacetamide	chemical toxicant	thiopacetamide		1	Inhibited	biased	-3	3.73E-04	3.24E-02	COL2A1,COL3A1,CXCL10,IGF1,PTG52,SEERIN4A3,SELE,VCAM1	9 (1)	1
S1PR2	0.125	G-protein coupled receptor	S1PR2	1	Inhibited	biased	-2	3.82E-04	1.10E-02	PTG52,SELE,SELE,VCAM1	4 (1)	1
KFBP18	-0.159	enzyme	KFBP18,NOS3	2	biased	1	4.04E-04	3.11E-02	ACTA1,GR2,MYO1A,NR4A1,NR4A3,PTG52,RGS2,S053,VCAM1	9 (3)	2	
PICK1	0.036	enzyme	ADCY,GRM7,PICK1,Pka	3	biased	-1.508	4.16E-04	4.66E-02	COL3A1,CXCL10,HNF4A,IGF1,NR4A1,OXTR,PKL,PLAU,PTG52,RGS2,SELE,VCAM1	11 (4)	3	
TAC1	-1.136	other	TAC1	1	biased	-0.707	4.29E-04	2.83E-02	COL3A1,CXCL10,GRK5,NF4A,IGF1,NR4A1,OXTR,KLRB1,PLAU,PTG52,SELE	8 (1)	1	
MEF2A	-0.059	transcription regulator	GATA4,MEF2A	2		0	4.48E-04	4.80E-02	ACTA1,ADORA1,CLDN2,CLSTN2,COL1A2,COL3A1,E15,EMX2,GBX2,PAX2,SELE,VCAM1	12 (2)	2	
P2RY4	-0.282	G-protein coupled receptor	P2RY4	1	biased	-1.732	4.66E-04	5.20E-02	LELIM1,PLIP,VCAM1	3 (1)	1	
PLA2G5	-0.928	enzym	PLA2G5	1	biased	-1.732	4.66E-04	4.30E-02	ALDXAP,ALPL,COL2A1,PTG52,SELE,VCAM1	3 (1)	1	
PTF1A	transcription regulator	PTF1A		1	Inhibited	biased	-2.646	4.98E-04	2.30E-02	ALDL,GB2,GRK2,PAK2,PRKCO,SSTR2,TFAP2B	7 (1)	1
rifampin	chemical drug	rifampin		1	biased	-1.134	4.98E-04	1.62E-02	ATGR1,COL1A1,CXCL10,CYP24,PTG52,SELE,VCAM1	7 (1)	1	
diethylstilbestrol	chemical drug	diethylstilbestrol		1	biased	0	5.03E-04	4.14E-02	ALDXAP,ALPL,BMP15,CEACAM1,CXCL10,IGF1,PLAU,PTG52,SELE,VCAM1	12 (1)	1	
CNR1	-0.582	G-protein coupled receptor	CNR1	1	biased	-1.508	5.03E-04	3.62E-02	ACTA1,CLDN2,CLSTN2,COL1A2,COL3A1,CSRP2,GRB2,PTG52,SELE,VCAM1	11 (1)	1	
Alpha catenin	group	Alpha catenin		1	Activated	biased	2.53	5.07E-04	4.06E-02	ACTA1,ADORA1,CLDN2,CLSTN2,COL1A2,COL3A1,E15,EMX2,GBX2,PAX2,SELE,VCAM1	10 (1)	1
androphrapholide	chemical drug	androphrapholide		1		1.342	5.17E-04	1.23E-02	CYP2A6 (includes others),OXTR,SPARC,WN71	5 (1)	1	
E1	group	E1,MAP3K7,TAB2,Ubiquitin		2		-0.333	5.54E-04	4.21E-02	ACTA1,CYB,CKL10,I1,POU2AF1,PTG52,RGS2,SELE,SLP1	9 (4)	3	
RETNLB	-0.14	other	RETNLB	1	Inhibited	biased	-2.828	5.62E-04	2.69E-02	COL1A2,GR2,MYO1A,NR4A1,NR4A3,PTG52,RGS2,SELE,VCAM1	8 (1)	1
starch	chemical - endogenous	NOS3,starch		2		-1.633	5.72E-04	2.01E-02	ACTA1,PTG52,S053,TRPV5,TRPV6,VCAM1	6 (2)	2	
3-alpha,17-beta-androstanediol	chemical - endogenous	3 alpha,17-beta-androstanediol		1	biased	1.414	5.91E-04	2.40E-02	Pbrn,TGM4	2 (1)	1	
glemasinerin	chemical drug	glemasinerin		1	biased	1.414	5.91E-04	1.40E-02	NR4A1,NR4A3	2 (1)	1	
tibolone	chemical drug	RUNX2,tibolone		2	Inhibited	biased	-2.333	5.98E-04	3.02E-02	ALDXAP,ALPL,COL2A1,PTG52,SELE,VCAM1	9 (2)	2
MYOCD	-0.346	transcription regulator	MYOCD,SRF	2	biased	-0.535	6.02E-04	4.97E-02	ABCG2,ALPL,BMP15,CEACAM1,CXCL10,IGF1,PLAU,PTG52,S100,SLC6A3	14 (2)	2	
ursodeoxycholic acid	chemical - endogenous	ursodeoxycholic acid		1		-1.134	6.14E-04	1.93E-02	ABCG2,COL2A1,CXCL10,CYP2C9,PTG52,SPARC,SP91	7 (1)	1	
Map3k7	-0.04	kinase	Map3k7	1	biased	0.378	6.14E-04	3.23E-02	CXCL10,EGFR2,H19,MX2,PTG52,RSAD2,VCAM1	7 (1)	1	
androgen	chemical drug	androgen		1		-0.333	6.45E-04	3.20E-02	APOL,COL1A2,ANP1,Crisp3,OTG1,PTG52,RGS2,SELE,VCAM1	9 (1)	1	
CHD4	0.09	enzyme	CHD4	1	biased	1.633	6.49E-04	4.10E-02	ADORA1,CA5Q1,DUOXA2,PTG52,SELE,VCAM1	6 (1)	1	
Nuclear factor 1 group	HSD11B2,NF1A,NF1B,NF1C,NF1X,Nuclear factor 1	HSD11B2,NF1A,NF1B,NF1C,NF1X,Nuclear factor 1		2		-1.633	6.49E-04	1.71E-02	IGF2,IGF1,PTG52,SELE,VCAM1	6 (6)	6	
ABC4B	-0.639	transporter	ABC4B	1	biased	1.342	7.21E-04	1.51E-02	COL2A1,CXCL10,SPARC,SP91,VCAM1	5 (1)	1	
GMP	chemical - endogenous	GMP,NADPH oxidase,NTSE		2		-0.447	7.21E-04	2.39E-02	COL3A1,PTG52,SP91,VCAM1	5 (3)	2	
tienadol	chemical drug	tienadol		2		-0.302	7.23E-04	3.70E-02	ACER2,CYP2D61,Cypd9 (includes others),IGF1,IL11,MGLL,Mup1 (includes others),PTG52,SELE,VCAM1	11 (3)	2	
chenodeoxycholic acid	chemical - endogenous	chenodeoxycholic acid		1		-0.707	7.27E-04	3.46E-02	ACOP,FBP1,HNF1A,NH4A,NKG1,LRP2,PLK4,PTG52	8 (1)	1	
pyrophosphate	chemical - endogenous	pyrophosphate		1	biased	1.732	7.32E-04	3.70E-02	ALDXAP,ALPL,BMP15,CEACAM1,CXCL10,IGF1,PLAU,PTG52,SELE,VCAM1	3 (1)	1	
RNF40	0.134	enzyme	RNF40	1	biased	-1.732	7.32E-04	5.00E-02	ALPL,BGAP,PDME1	3 (1)	1	
testosterone propionate	chemical drug	testosterone propionate		1	biased	-0.816	7.34E-04	8.80E-03	ADM,ADM,BMT1,OXTR,Pbrn,PTG52,SLC2A63	6 (1)	1	
arginase	group	ARG1,arginase,Nos,NOS3		2		1.89	7.50E-04	3.47E-02	ACTA1,IGF1,MAPT,PTG52,S053,IMPL,VCAM1	7 (4)	3	
CYT1	-0.645	cytokine	CYT1,SOX9	2	Inhibited	biased	-2.646	7.50E-04	2.62E-02	BEST1,WMB1,IL1B,M19,IGF1,PTG52,SELE,VCAM1	7 (2)	2
coumarin	chemical drug	coumarin,dihydroxyisostyrene,Ggt,NSQ01		2		1.265	7.57E-04	4.99E-02	C19,CYP2A61,GSTA3,HNF4A,NHL4,NL1,PTG52,SELE,VCAM1	10 (5)	5	
MTPN	-0.151	transcription regulator	MTPN	1	Inhibited	biased	-2.121	7.90E-04	4.60E-02	APOL,CASQ1,COL1A2,DOG1,IGF1,PLAU,PTG52,SELE,VCAM1	8 (1)	1
ciprofibrate	chemical drug	ciprofibrate		1		0.302	8.12E-04	4.76E-02	AICF,CEACAM1,CYP2C9,PTG52,SP91,VCAM1	11 (1)	1	
PLK2	0.162	kinase	PLK2,SNCA	2	biased	-0.905	8.12E-04	2.73E-02	BIGLAP,CXCL10,DOC,ERCC2,GNNG,UCYC2,IGF1,IL11,MGLL,Mup1,PTG52,SELE,VCAM1	11 (2)	2	
FOXL2	-0.678	transcription regulator	FOXL2	1	biased	-1.89	8.26E-04	2.68E-02	ST,GP,GRK2,KCNAL1,KCNAL2,SLC1A1,TRP2,PTG52,SELE,VCAM1	7 (1)	1	
SGK1	0.013	kinase	SGK1	1	Inhibited	biased	-2.646	8.26E-04	2.54E-02	CTFR,GRK2,KCNAL1,KCNAL2,SLC1A1,TRP2,PTG52,SELE,VCAM1	7 (1)	1
5-hydroxytryptamine	chemical - endogenous	5-hydroxytryptamine		1	biased	-1.89	8.26E-04	3.04E-02	ALDXAP,DUOXA2,HTR2B,IGF1,PLAU,PTG52,SELE,VCAM1	7 (1)	1	
MYOC	0.454	other	MYOC	1	Inhibited	biased	-2.236	8.42E-04	1.81E-02	GR2,MP2,NFAC5,S100,SP91	5 (1)	1
DBI	-0.494	other	CAT,COK,BBL,Sod	2		0.707	8.57E-04	4.64E-02	ADM,CXCL10,ELOV11,PTG52,SELE,VCAM1	8 (4)	4	
dimethyl sulfoxide	chemical drug	dimethyl sulfoxide		1	biased	-2.53	9.15E-04	4.68E-02	ADM,PTG52,SELE,VCAM1	10 (1)	1	
NKX2-3	-0.47	transcription regulator	NKX2-3	1		-1.069	9.53E-04	3.34E-02	ADM,ALPL,ANGPT1,BCHE,CYRAB,FAM198B,FBN2,MDAG,PLCB1,PSA	14 (1)	1	
potassium chloride	chemical drug	potassium chloride		1	Inhibited	biased	-2.449	1.04E-03	2.29E-02	PTGB3,GP93,SERP1,NEFH,RET,SUT2,TRPV6	6 (1)	1
Mir218	microRNA	Mir218		1		-0.577	1.08E-03	9.80E-03	GOAT,SP91,LTJ,PTG52,SELE,VCAM1	3 (1)	1	
GDF2	-0.203	growth factor	GDF2	1	Inhibited	biased	-2.828	1.09E-03	4.57E-02	ABCG2,BMP2,CRYAB,IGF1,PLAU,PTG52,SELE,VCAM1	8 (1)	1
cyclopamine	chemical reagent	cyclopamine		1	biased	-0.447	1.13E-03	1.74E-02	BIGLAP,DOC,ERCC2,GNNG,UCYC2,IGF1,PLAU,PTG52,SELE,VCAM1	5 (1)	1	
Tetanospasmin	chemical - endogenous	DP94,Tetanospasmin		2		1.342	1.13E-03	2.47E-02	GR2,KCN1,KCN2,PLAU,PTG52,SELE,VCAM1	5 (2)	2	
11,12-epoxycicosatrienoic acid	chemical - endogenous	11,12-epoxycicosatrienoic acid		1	biased	0	1.23E-03	1.81E-02	CYP2C9,EPHX2,SELE,VCAM1	4 (1)	1	
HRG	other	HRG		1	Inhibited	biased						

SB 216763	chemical toxicant	SB 216763	1	biased	-1.342	1.30E-03	3.18E-02	NR4A1,NR4A3,PLAU,PTG52,RGS2	5 (1)	1	
dimethyl succinate	chemical - endogenous	dimethyl succinate,DIO2	2		-0.447	1.30E-03	1.15E-02	IGF1,NefN,NefN,SLC16A1,STAC2	5 (2)	2	
CBX5	-0.132 transcription regulator	CBX5	1	Activated	2.333	1.38E-03	1.89E-02	15grf48,CEGAM1,FAM19B8,MUC13,PCP4,PODXL2,PROM2,SERPINA1	9 (1)	1	
FGF8	growth factor	FGF8	1	biased	-0.707	1.46E-03	2.75E-02	IGLAP,CRIP1,CRYAB,FGFR4,GKB2,SLP1,SPARC,SPPI	8 (1)	1	
LMX1B	0.159 transcription regulator	LMX1B,SNCA	2		1.265	1.47E-03	2.72E-02	IGLAP,DOC,ERCI,GN4,GUCY2J,IGF1,NefN,RET,SUTZ,SV2B	10 (2)	2	
UTP	chemical - endogenous	UTP	1	biased	0	1.49E-03	1.63E-02	NCX4,NCND2,PP1,VCAM1	4 (1)	1	
ALDH2	-0.592 enzyme	ALDH2	1	biased	1	1.49E-03	1.25E-02	CTH,GSTA3,PSAT1,SLC7A5	4 (1)	1	
beta-glycerophosphoric acid	chemical - endogenous	beta-glycerophosphoric acid	1	Inhibited	biased	-2	1.49E-03	2.85E-02	ALPL,BGLAP,PTG52,SPARC	4 (1)	1
HPGDS	-0.538 enzyme	HPGDS,IKK (complex)	2		-1	1.49E-03	1.25E-02	CXL10,PTG52,PTG52,VCAM1	4 (2)	2	
beme arinate	chemical drug	beme arinate,Ho,PLC	2		-1	1.49E-03	9.80E-03	CXL10,NR4A1,PTG52,SPARC	4 (3)	2	
6-mercaptopurine	chemical drug	6-mercaptopurine	1	biased	-0.577	1.51E-03	1.71E-02	CXL10,NR4A3,VCAM1	3 (1)	1	
TRPV1	0.149 ion channel	TRPV1	1	biased	0.577	1.51E-03	1.81E-02	GFAP,IL11,PTG52	3 (1)	1	
MEF2D	-0.036 transcription regulator	MEF2D	1	Inhibited	biased	-2.449	1.59E-03	3.79E-02	ACTA1,COLA2,COA3,IGF1,NefN,SOFT	6 (1)	1
rotenone	chemical toxicant	rotenone	1		0	1.59E-03	4.22E-02	GFAP,MAPT,PTG52,SLC16A1,VCAM1	6 (1)	1	
GW 4064	chemical toxicant	GW 4064	1	biased	-0.816	1.59E-03	2.85E-02	APOF,DOAH,LKKNL1,NR4A1,PKLR	6 (1)	1	
paricalcitol	chemical drug	paricalcitol	1	biased	0.447	1.69E-03	3.38E-02	BGLAP,COA3,IMP1,TRPV6,VCAM1	5 (1)	1	
des-Ago(10)-kallidin	chemical reagent	des-Ago(10)-kallidin	1	biased	-1.414	1.74E-03	1.00E-02	BDKRB1,PTG52	2 (1)	1	
NCF2	-0.319 enzyme	NCF2	1	biased	-1.414	1.74E-03	1.58E-02	LELE,VCAM1	2 (1)	1	
riociguat	chemical drug	riociguat	1	biased	1.414	1.74E-03	1.17E-02	PP1,TIMP1	2 (1)	1	
MOGAT1	-0.92 enzyme	MOGAT1	1	biased	0	1.74E-03	6.90E-03	CXL10,TIMP1	2 (1)	1	
RCAN1	-0.391 transcription regulator	RCAN1	1	Activated	biased	2	1.79E-03	3.07E-02	ACTA1,PTG52,SELE,VCAM1	4 (1)	1
MED13	-0.023 transcription regulator	MED13	1	Activated	biased	2	1.79E-03	1.26E-02	CYPAAG (includes others),ELOV6,KNG1,PYGL	4 (1)	1
SLC13A1	0.171 transporter	SLC13A1	1		-0.707	1.81E-03	1.96E-02	ANKS4B,ELOV6,GOS2,HNMT,IGF1,REG3A,SLC16A1,SPPI	8 (1)	1	
memantine	chemical drug	memantine	1	biased	-1.342	1.92E-03	2.17E-02	CYP9C,CYPAA2,DOC,GFAP,SPON1	5 (1)	1	
AH11	-0.034 other	AH11,NCX	2		0.447	1.92E-03	1.24E-02	LCMD1,NR4C4,SP1,STAP1,SV2B	5 (2)	2	
SYK/ZAP group	SYK/ZAP		1	biased	-1.732	2.04E-03	2.56E-02	PTG52,TIMP1,VCAM1	3 (1)	1	
PTGER1	0.289 G-protein coupled rec	PTGER1	1	biased	-0.577	2.04E-03	4.04E-02	ANGPT1,EGFR,PTG52	3 (1)	1	
enterolactone	chemical - endogenous	enterolactone	1	biased	-1.732	2.04E-03	1.70E-02	BGLAP,SPARC,SPPI	3 (1)	1	
trientine	chemical drug	trientine	1	biased	0.577	2.04E-03	1.24E-02	COLA3A1,IGF1,LS003	3 (1)	1	
Z-aminothiopurine	chemical reagent	Z-aminothiopurine	1	biased	-1	2.12E-03	3.26E-02	CXL10,CYP2A6 (includes others),IGF1,PTG52	4 (1)	1	
WDR77	-0.057 transcription regulator	WDR77	1	Inhibited	biased	-2	2.12E-03	6.90E-03	EFH1,DMBL1,SLC16A3,Sv2	4 (1)	1
halofuginone	chemical drug	halofuginone	1	Activated	biased	2	2.12E-03	2.75E-02	COLLA2,H19,SPPL1,TIMP1	4 (1)	1
Calcineurin protein(s) complex	Calcineurin protein(s)		1	biased	-0.816	2.13E-03	4.60E-02	GR2,MYD14,NA4B1,NA4B4,PTG52,RGS2	6 (1)	1	
HDAC4	-0.141 transcription regulator	HDAC4	1		1.342	2.16E-03	3.70E-02	ACTA1,PTG52,VCAM1	5 (1)	1	
SNCA	-0.857 enzyme	SNCA	1	biased	1.667	2.26E-03	3.47E-02	BGLAP,DEPTOR,Hox8,Hox9,MGLL,POU2AF1,PRDM16,RSP01	9 (1)	1	
ASB2	-0.289 transcription regulator	ASB2,KMT2A,Ubiquitin	2	biased	1.414	2.37E-03	3.44E-02	CRYAB,DEPTOR,Hox8,Hox9,MGLL,POU2AF1,PRDM16,RSP01	8 (3)	2	
ELK1	-0.017 transcription regulator	ELK1	1	Inhibited	biased	-2.236	2.43E-03	4.65E-02	IMP1,EGFR,PTG52,SP1,TPD52L1	5 (1)	1
3-methylcholanthrene	chemical toxicant	3-methylcholanthrene	1	biased	1.342	2.43E-03	6.90E-02	ADM,BGLAP,GST3,HNMT,IGF1,NefN,RET,SV2B	5 (1)	1	
ADA	-0.37 enzyme	ADA	1	Activated	biased	2	2.50E-03	3.47E-02	ADRA2A,COA3A2,SP1,TIMP1	4 (1)	1
MB21D1	0.207 enzyme	MB21D1	1	biased	1.732	2.67E-03	1.54E-02	CXL10,Mx1,Mx2,SPAD2	3 (1)	1	
EPHA2	0.263 kinase	EPHA2	1		-0.577	2.67E-03	1.99E-02	LELE,SU72,VCAM1	3 (1)	1	
N,N-dimethylsphingosine	chemical reagent	N,N-dimethylsphingosine	1	biased	0.577	2.67E-03	3.26E-02	PTG52,SELE,VCAM1	3 (1)	1	
TMEM173	0.173 other	TMEM173	1	biased	0.447	2.73E-03	4.06E-02	15grf48,CXL10,DMO1/Mx2,RS2D2,Serpina3g (includes others)	5 (1)	1	
KIAA1524	0.071 other	KIAA1524	1	biased	0.816	2.80E-03	4.76E-02	CRIP1,CRYAB,NP74,PDK4,SCIN,SERPINE2	6 (1)	1	
TRIB3	-0.144 kinase	TRIB3	1	biased	0	2.92E-03	3.06E-02	BGLAP,SP1,STC2	4 (1)	1	
ramipril	chemical drug	ramipril	1	biased	1	2.92E-03	3.00E-02	COLA2,COA3A1,PTG52,TIMP1	4 (1)	1	
3-deazeplanocin	chemical drug	3-deazeplanocin,ANCY	2	Inhibited	biased	-2.449	3.05E-03	4.23E-02	ANXA8,ANXA8B1,EXOC3L4,KCNQ4,PLAU,SLP1,VCAM1	6 (2)	2
AH11	-0.034 other	AH11	1		1	3.39E-03	8.50E-03	IMCD1,SP1,TPA1,SV2	4 (1)	1	
AGRTR2	0.388 G-protein coupled rec	AGRTR2	1	Inhibited	biased	-2	3.39E-03	4.16E-02	ACTA1,GT1,COA3A1,IGF1,KN6N1	4 (1)	1
chlorpromazine	chemical drug	chlorpromazine	1	biased	-1	3.39E-03	2.46E-02	IRAK1,IRAK3,LCB1,SPRPN3A	4 (1)	1	
NTSE	-1.313 phosphatase	NTSE	1	biased	0.577	3.41E-03	4.91E-02	COLA3A1,SP1,TIMP1	3 (1)	1	
BMX	-1.568 kinase	BMX	1	biased	-0.577	3.41E-03	4.05E-02	COLA3A1,Pbn,TIMP1	3 (1)	1	
ARID2	0.242 transcription regulator	ARID2	1	biased	-1.414	3.43E-03	1.01E-02	BGLAP,BIP	2 (1)	1	
GNB5	0.304 enzyme	GNB5	1	biased	-1.414	3.43E-03	4.30E-02	GGSK,RG59	2 (1)	1	
GAS7	-0.531 transcription regulator	GAS7	1	biased	-1.414	3.43E-03	2.08E-02	BGLAP,SPR1	2 (1)	1	
parbendazole	chemical reagent	parbendazole	1	biased	-1.414	3.43E-03	1.50E-02	ALPL,SPP1	2 (1)	1	
PROK1	-0.827 growth factor	PROK1	1	biased	-1.414	3.43E-03	2.06E-02	L11,PTG52	2 (1)	1	
NFKBIE	0.176 transcription regulator	NFKBIE	1	biased	-1.414	3.43E-03	1.84E-02	LELE,VCAM1	2 (1)	1	
furosemide	chemical drug	furosemide	1	biased	0	3.43E-03	2.28E-02	AXAZ,PTG52	2 (1)	1	
cilazapril	chemical drug	cilazapril	1	biased	1.414	3.43E-03	1.00E-02	ACTA1,COA3A1	2 (1)	1	
chlorothiazide	chemical drug	chlorothiazide	1	biased	-1.414	3.43E-03	1.13E-02	RPV5,TRPV6	2 (1)	1	
vanadium pentoxide	chemical toxicant	vanadium pentoxide	1	biased	0	3.43E-03	1.59E-02	CXL10,PTG52	2 (1)	1	
durapatite	chemical - endogenous	durapatite	1	biased	-1.414	3.43E-03	2.35E-02	ALPL,SPP1	2 (1)	1	
MKL2	0.056 transcription regulator	MKL2	1	biased	1.342	3.76E-03	2.82E-02	ACTA1,CLDN15,EPK,GOS2,SLP1	5 (1)	1	
CDX1	-1.047 transcription regulator	CDX1	1		-1.342	3.76E-03	3.61E-03	BGAI15,CLDN2,DDC,KCN15,PTG52	5 (1)	1	
triflupromazine	chemical drug	CHRM1,DRD1,DRD2,HTR2B,triflupromazine	2	Activated	biased	2.236	3.76E-03	4.69E-02	COLA3A1,CRYAB,ERG2,IGF1,TACR1	5 (5)	4
THBS4	-0.476 other	THBS4	1	biased	0	3.90E-03	3.22E-02	COLA3A1,CXL10,SELE,VCAM1	4 (1)	1	
ZNF106	-0.293 other	ZNF106	1		-1.342	4.16E-03	2.90E-02	COLA6A1,CXL10,GLRX,MP2,SERPINA3	5 (1)	1	
Ileukotriene C4	chemical - endogenous	Ileukotriene C4	1	biased	-1.732	4.27E-03	4.53E-02	EGFR,PTG52,VCAM1	3 (1)	1	
PLC	group	PLC	1	biased	0.577	4.27E-03	4.27E-03	PTG52,VCAM1	3 (1)	1	
HNF4?? dimer	complex	HNF4?? dimer	1	biased	-0.577	4.27E-03	2.53E-02	BPLHNF1A,PKLR	3 (1)	1	
EDRNA	-0.426 transmembrane recep	EDRNA	1	biased	-1.732	4.27E-03	2.87E-02	COLA3A1,PTG52,TIMP1	3 (1)	1	
hydroxyflutamide	chemical drug	hydroxyflutamide	1		0.577	4.27E-03	3.06E-02	DOC,IGF1,VCAM1	3 (1)	1	
hyperforin	chemical drug	hyperforin	1	biased	-1.732	4.27E-03	2.65E-02	CYP29,SPPI	3 (1)	1	
POU4F1	0.63 transcription regulator	POU4F1	1		-0.378	4.67E-03	4.16E-02	AVIL,CLIC6,GB2X,NTK3,PAFF2,RET,TFAP2B	7 (1)	1	
SMTN1	-0.636 other	SMTN1	1	biased	0	5.08E-03	2.48E-02	ACTA1,XTR,PTG52,TNNC2	4 (1)	1	
CHAD	-0.003 other	CHAD	1		0	5.08E-03	4.25E-02	CRYAB,NTK3,MP3,VCAM1	4 (1)	1	
INHBB	0.155 growth factor	INHBB	1	biased	-1.732	5.24E-03	2.91E-02	COLA3A1,LOX13,SELE,VCAM1	3 (1)	1	
NFIA	-0.021 transcription regulator	NFIA	1	biased	-1.732	5.24E-03	2.96E-02	CYP2A6 (includes others),PKLR,SUT2	3 (1)	1	
thiazolidinedione	chemical drug	thiazolidinedione	1	biased	-1.732	5.24E-03	2.30E-02	NR4A1,NR4A3,SOFT	3 (1)	1	
dibutyryl cGMP	chemical reagent	dibutyryl cGMP	1		0	5.63E-03	3.70E-02	PTG52,VCAM1	2 (1)	1	
elocalcitol	chemical drug	elocalcitol	1	biased	-1.414	5.63E-03	2.26E-02	BGLAP,SPPI	2 (1)	1	
OLIG2	transcription regulator	OLIG2	1		1.414	5.63E-03	1.20E-02	GFAP,S100B	2 (1)	1	
CH-223191	chemical reagent	CH-223191	1	biased	-1.414	5.63E-03	3.09E-02	COLA2,COL3A1	2 (1)	1	
2-cyclohexen-1-one	chemical - endogenous	2-cyclohexen-1-one	1	biased	1.414	5.63E-03	3.21E-02	PTG52,VCAM1	2 (1)	1	
ceftiraxone	chemical drug	ceftiraxone	1		0	5.63E-03	4.68E-02	GFAP,SLC1A1	2 (1)	1	
starch	chemical - endogenous	starch	1	biased	-1.414	5.63E-03	2.07E-02	RPV5,TRPV6	2 (1)	1	
trestolone	chemical drug	trestolone	1	biased	1.414	5.63E-03	2.05E-02	Bn,TGM4	2 (1)	1	
risperidone	chemical drug	risperidone	1		-1.732	6.33E-03	3.52E-02	CXL10,NR4A1,NR4A3	3 (1)	1	
Diphtheria Toxin	chemical reagent	Diphtheria Toxin	1	biased	-1.732	6.33E-03	4.34E-02	ACTA1,COLA2,COL3A1	3 (1)	1	
DNAJB6	0.178 transcription regulator	DNAJB6	1	biased	0.577	6.33E-03	4.42E-02	ZGP1,SPARC,SPPI	3 (1)	1	
NCR2	transmembrane receptor	NCR2	1	biased	-1.732	6.33E-03	4.89E-02	NR4A1,NR4A3,PTG52	3 (1)	1	
CST2	other	ASA1,CST2,CTSK	2	biased	-1	6.48E-03	4.02E-02	CYP2A12,NR4A1,NR4A3,PTG52	4 (3)	2	
dacarbazine	chemical drug	ASA1,dacarbazine	2	biased	-1	6.48E-03	3.32E-02	CXL10,CYP2A12,NR4A1,NR4A3	4 (2)	2	
DIO2	-0.354 enzyme	DIO2	1		-1	7.26E-03	3.58E-02	DKK1,NEFH,NefN,STAC2	4 (1)	1	
NF1X	0.101 transcription regulator	NF1X	1		-1.732	7.55E-03	4.82E-02	GFAP,PKLR,SERPINA3	3 (1)	1	
20-hydroxyeicosatetraenoic acid	chemical - endogenous	20-hydroxyeicosatetraenoic acid	1	biased	-1.414	8.31E-03	2.41E-02	CYP29,EPH2	2 (1)	1	
benfluorex	chemical drug	benfluorex	1	biased	0	8.31E-03	2.70E-02	IMGCSS,PKLR	2 (1)	1	
mir-320	microRNA	mir-320	1	biased	1						

12-hydroxyeicosatetraenoic acid	chemical - endogenous	12-hydroxyeicosatetraenoic acid		1	biased	-1.414	8.31E-03	4.80E-02	PTGS2,VCAM1	2 (1)	1	
Muscarinic cholinergic receptor	group	Muscarinic cholinergic receptor		1	biased	0	8.31E-03	2.61E-02	APLRG52	2 (1)	1	
KMT2A	transcription regulator	KMT2A		1	Inhibited	biased	-2.449	8.68E-03	4.89E-02	DEPTOR,HOX88,HOXD3,MGLL,PRDM16,RSP01	6 (1)	1
CREB3L1	-0.863 transcription regulator	CREB3L1		1	biased	-1.732	8.90E-03	4.76E-02	BGLAP,COL2A2,SPPI	3 (1)	1	
AIRE	0.353 transcription regulator	AIRE		1	Inhibited	biased	-2	9.99E-03	4.94E-02	CXL10,M2P2,Mup1 (includes others),PCP4	4 (1)	1
phlorizin	chemical - endogenous	phlorizin		1	biased	1.414	1.14E-02	2.97E-02	GFAP,HNF1A	2 (1)	1	
Glucocorticoid-GCR	complex	Glucocorticoid-GCR		1	biased	0	1.14E-02	3.21E-02	A2M,BGLAP	2 (1)	1	
miR-320b (and other miRNAs w/seed AAAGCUG)	mature microRNA	miR-320b (and other miRNAs w/seed AAAGCUG)		1	biased	1.414	1.14E-02	4.87E-02	HSPB6,JGF1	2 (1)	1	
PRKCG	0.302 kinase	PRKCG		1	biased	-1.414	1.14E-02	4.89E-02	OTX,TACR1	2 (1)	1	
COL4A3	0.269 other	COL4A3		1	biased	1.414	1.14E-02	4.56E-02	COL1A2,PTGS2	2 (1)	1	
TMPO	0.033 other	TMPO		1	biased	-1.414	1.14E-02	3.07E-02	COL2A1,COL3A1	2 (1)	1	
MC1R	0.934 G-protein coupled receptor	MC1R		1	biased	-1.414	1.14E-02	4.87E-02	NR4A1,NR4A3	2 (1)	1	
TARBP2	0.017 other	TARBP2		1	biased	0	1.14E-02	3.60E-02	NKX3-1,RET	2 (1)	1	
raclopride	chemical drug	raclopride		1	biased	-1.414	1.14E-02	4.28E-02	NR4A1,NR4A3	2 (1)	1	
Gm15807/Hmgn5	-0.146 other	Gm15807/Hmgn5		1	biased	-0.577	1.20E-02	3.02E-02	ACTA1,A2Gf1,TNNC2	3 (1)	1	
miR-293-5p (and other miRNAs w/seed CUCAAC)	mature microRNA	miR-293-5p (and other miRNAs w/seed CUCAAC)		1	biased	1.732	1.37E-02	3.73E-02	ADORA1,KCNJ16,NR4A1	3 (1)	1	
dovitinib	chemical drug	dovitinib		1	biased	-1.414	1.90E-02	4.67E-02	ANXA9,CR2	2 (1)	1	
RFX1	0.1 transcription regulator	RFX1		1	biased	0	1.90E-02	2.89E-02	COL2A1,SLC1A1	2 (1)	1	
BHLHA15	-2.004 transcription regulator	BHLHA15		1	biased	1.414	1.90E-02	4.06E-02	REGIA,REG3A	2 (1)	1	
FKHR	group	FKHR		1	biased	-1	2.43E-02	4.41E-02	A2M	1 (1)	1	
Cyp4a14	-0.189 enzyme	Cyp4a14		1	biased	1	2.43E-02	3.20E-02	CYP4A22	1 (1)	1	
CACNG8	-0.458 ion channel	CACNG8		1	biased	1	2.43E-02	2.37E-02	CNH2	1 (1)	1	
UBAP1	0.088 other	UBAP1		1	biased	1	2.43E-02	3.88E-02	DEPTOR	1 (1)	1	
KLHL17	0.196 other	KLHL17		1	biased	1	2.43E-02	3.23E-02	GRK2	1 (1)	1	
SI	1.002 enzyme	SI		1	biased	1	2.43E-02	2.60E-02	MYO1A	1 (1)	1	
B3GALT1	-0.511 enzyme	B3GALT1		1	biased	-1	2.43E-02	3.30E-02	B3GALT5	1 (1)	1	
SPAST	-0.141 enzyme	SPAST		1	biased	1	2.43E-02	3.67E-02	EMX2	1 (1)	1	
SLC17A6	transporter	SLC17A6		1	biased	1	2.43E-02	3.56E-02	NR4A1	1 (1)	1	
B4GALT6	0.321 enzyme	B4GALT6		1	biased	-1	2.43E-02	3.36E-02	GFAP	1 (1)	1	
RG598P	0.129 other	RG598P		1	biased	-1	2.43E-02	3.27E-02	RG59	1 (1)	1	
CHMP4C	0.201 other	CHMP4C		1	biased	1	2.43E-02	3.88E-02	DEPTOR	1 (1)	1	
HNF1?? dimer	complex	HNF1?? dimer		1	biased	-1	2.43E-02	4.20E-02	INHAA	1 (1)	1	
Cabin1-HDAC1/2-MEF2D-MITR-Sin3	complex	Cabin1-HDAC1/2-MEF2D-MITR-Sin3		1	biased	1	2.43E-02	3.56E-02	NR4A1	1 (1)	1	
MEF2D-NFAT2-p300	complex	MEF2D-NFAT2-p300		1	biased	-1	2.43E-02	3.56E-02	NR4A1	1 (1)	1	
MED12	0.194 transcription regulator	MED12		1	biased	-1	2.43E-02	3.46E-02	GRK2	1 (1)	1	
PLCB4	-0.478 enzyme	PLCB4		1	biased	-1	2.43E-02	3.99E-02	PLCB1	1 (1)	1	
GR 82334	biologic drug	GR 82334		1	biased	-1	2.43E-02	4.41E-02	CXL10	1 (1)	1	
SLC32A1	-0.033 transporter	SLC32A1		1	biased	1	2.43E-02	3.78E-02	GABRA1	1 (1)	1	
miR-342-5p (and other miRNAs w/seed GGGGUUC)	mature microRNA	miR-342-5p (and other miRNAs w/seed GGGGUUC)		1	biased	1	2.43E-02	2.55E-02	KCNJ16	1 (1)	1	
miR-3584-5p (and other miRNAs w/seed GGAGGAG)	mature microRNA	miR-3584-5p (and other miRNAs w/seed GGAGGAG)		1	biased	1	2.43E-02	3.54E-02	NTRK3	1 (1)	1	
miR-625-5p (and other miRNAs w/seed GGGGGAA)	mature microRNA	miR-625-5p (and other miRNAs w/seed GGGGGAA)		1	biased	1	2.43E-02	3.54E-02	NTRK3	1 (1)	1	
PICK1	0.036 enzyme	PICK1		1	biased	-1	2.43E-02	3.70E-02	SLC1A1	1 (1)	1	
SUPT16H	-0.014 transcription regulator	SUPT16H		1	biased	-1	2.43E-02	3.52E-02	ACTA1	1 (1)	1	
VGLL4	0.069 other	VGLL4		1	biased	1	2.43E-02	3.52E-02	ACTA1	1 (1)	1	
MAG	-0.369 other	MAG		1	biased	1	2.43E-02	2.26E-02	RTN4R	1 (1)	1	
NRN1	-0.828 other	NRN1		1	biased	-1	2.43E-02	3.37E-02	CND2	1 (1)	1	
RBFOX1	-0.366 other	RBFOX1		1	biased	-1	2.43E-02	2.33E-02	CNB8A	1 (1)	1	
ADAM19	-0.387 peptidase	ADAM19		1	biased	-1	2.43E-02	3.46E-02	GRK2	1 (1)	1	
RAB14	-0.064 enzyme	RAB14		1	biased	1	2.43E-02	3.61E-02	LC114A2	1 (1)	1	
IRX5	transcription regulator	IRX5		1	biased	1	2.43E-02	3.37E-02	CND2	1 (1)	1	
Pln	-0.305 other	Pln		1	biased	-1	2.43E-02	3.52E-02	ACTA1	1 (1)	1	
CID-2011756	chemical reagent	CID-2011756		1	biased	1	2.43E-02	3.56E-02	NR4A1	1 (1)	1	
L-sulforaphane	chemical reagent	L-sulforaphane		1	biased	-1	2.43E-02	3.70E-02	SLC1A1	1 (1)	1	
angiotensin-converting enzyme inhibitor	chemical drug	angiotensin-converting enzyme inhibitor		1	biased	-1	2.43E-02	4.08E-02	NGN1	1 (1)	1	
annonacin	chemical reagent	annonacin		1	biased	-1	2.43E-02	4.16E-02	MAPT	1 (1)	1	
NCGC00184710	chemical reagent	NCGC00184710		1	biased	1	2.43E-02	4.39E-02	DK4	1 (1)	1	
2,4-dinitrophenylhydrazine	chemical toxicant	2,4-dinitrophenylhydrazine		1	biased	-1	2.43E-02	2.80E-02	PLA2G2F	1 (1)	1	
4,4'-diaminodiphenylmethane	chemical toxicant	4,4'-diaminodiphenylmethane		1	biased	1	2.43E-02	4.41E-02	CXL10	1 (1)	1	
synthetic peptide	chemical reagent	synthetic peptide		1	biased	-1	2.43E-02	4.50E-02	SPARC	1 (1)	1	
bicarbonate	chemical - endogenous	bicarbonate		1	biased	1	2.43E-02	3.61E-02	SLC14A2	1 (1)	1	
PHA-666859	chemical - kinase inhib	PHA-666859		1	biased	1.414	3.86E-02	4.75E-02	CRYAB,CRYBB1	2 (1)	1	

Supplemental Table S4. Identification of Lipopolysaccharide in the Upstream Regulator Analysis in IPA

Target	Expr Log Ratio	Molecule Type	Lipopopolysaccharide	IFNG	IL1B	TNF	TGFBI	NFkB (complex)	NFKBIA	Ap1	STAT3	SP1	CREBBP	STAT6	RELA	MYC	CTNNB1	JUN	SMAD3
NEFH	-6.018	other			Inhibited												Affected		
CDO1	-4.875	enzyme			Activated														
CLDN2	-4.812	other																Affected	
REG1A	-4.655	growth factor																	
AASS	-4.600	enzyme			Affected														
EML2	-4.569	transcription regulator																	
UPB1	-4.292	enzyme																Affected	
REG3A	-4.232	enzyme																Affected	
PAX2	-3.877	transcription regulator																Affected	
MYBPC1	-3.786	other																	
PLA2G2F	-3.714	enzyme	Inhibited																
NR4A3	-3.517	ligand-dependent nuclear receptor	Inhibited		Inhibited	Affected	Affected											Affected	
WNT7A	-3.495	cytokine																	
SERPINE2	-3.424	other	Affected		Inhibited	Inhibited													
CRC	-3.382	transmembrane receptor	Affected																
PTGDS	-3.281	enzyme	Inhibited		Inhibited	Activated												Affected	
Crisp1/Crisp3	-2.941	other																	
EIF5	-2.869	transcription regulator																	
SLC14A2	-2.775	transporter			Activated	Activated	Activated												
CCNO	-2.742	enzyme			Activated														
DDAH1	-2.658	enzyme																Affected	
GABRA1	-2.591	ion channel																	
CERD	-2.571	peptidase																Affected	
PTG52	-2.507	enzyme	Inhibited		Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	
CRYBB1	-2.482	other																	
SELE	-2.452	transmembrane receptor	Inhibited		Activated	Inhibited	Activated	Inhibited	Activated	Inhibited	Inhibited	Inhibited	Affected						
PLAU	-2.451	peptidase	Inhibited		Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Affected	Inhibited							
Mup1 (includes others)	-2.444	other																	
OVO52	-2.43	other																	
LRP2	-2.428	transporter																	
CALM4	-2.42	other																	
DUOXA2	-2.403	other																	
F5GR4	-2.382	kinase																	
LBRN1	-2.379	other																Affected	
RASGRF2	-2.376	other																	
SPCK1	-2.324	other																	
CRFL1	-2.28	other																	
PFKP83	-2.273	kinase	Inhibited																
SGPP2	-2.236	phosphatase	Inhibited																
CYP26A1	-2.207	enzyme																	
SMOC1	-2.174	other																	
S100B	-2.163	other																	
SOX11	-2.158	transcription regulator																	
BDKRB1	-2.141	G-protein coupled receptor	Inhibited		Inhibited	Inhibited													
GGT1	-2.139	enzyme																	
AOP9	-2.123	transporter																	
CDH16	-2.115	enzyme																	
Neafm	-2.111	other	Inhibited																
NRK	-2.102	kinase																	
NPY2R	-2.101	G-protein coupled receptor	Inhibited																
WNT16	-2.076	other																Affected	
PKLR	-2.074	kinase																Inhibited	
HDXB2	-2.069	transcription regulator																Affected	
C2orf40	-2.041	other																Inhibited	
ADAM12	-2.009	peptidase																Affected	
REG3G	-2.003	other	Inhibited															Affected	
HOXB8	-2.002	transcription regulator																	
PLA2G2D	-1.981	enzyme																	
HNF1A	-1.981	transcription regulator	Activated		Activated	Activated	Activated	Affected			Affected	Affected						Activated	
GBX2	-1.976	transcription regulator																	
NPTX1	-1.968	other																	
DUOX2	-1.966	enzyme																	
CES1	-1.923	enzyme																	
WISP2	-1.915	growth factor																	
RET	-1.907	kinase																	
BGLAP	-1.903	other																	
CYP2C9	-1.884	enzyme	Activated		Activated	Activated												Affected	
ANGPTL4	-1.883	other	Inhibited		Inhibited	Inhibited	Inhibited												
CTH	-1.849	enzyme	Inhibited																
EPSR3	-1.843	other																	
ANK1	-1.823	other																	
DMBT1	-1.822	transmembrane receptor	Inhibited		Inhibited	Inhibited													
PCP4	-1.805	other																	
USH1C	-1.801	other																	
SP1B	-1.795	transcription regulator																	
CYP2A6 (includes others)	-1.781	enzyme	Activated															Inhibited	
RG35	-1.775	other																	
ACTA1	-1.763	other	Activated																
GLIS1	-1.757	transcription regulator																	
EDN3	-1.754	other																Affected	
NCALD	-1.753	transporter																	
APOL6	-1.743	transporter	Inhibited		Inhibited	Inhibited													
A2M	-1.732	transporter																	
PRKCO	-1.729	kinase	Inhibited																
SOD1	-1.697	other																	
BMPER	-1.688	other																	
NR12	-1.684	ligand-dependent nuclear receptor	Activated																
BCAT1	-1.668	enzym																	
GPRC5B	-1.664	G-protein coupled receptor																	
MUC5B	-1.643	peptidase	Activated		Inhibited	Inhibited												Affected	
MAPT	-1.641	other	Activated		Inhibited														
VCAM1	-1.643	transmembrane receptor	Inhibited		Inhibited	Inhibited	Activated	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	Inhibited	
ARNT2	-1.639	other																	
HNFA1	-1.617	transcription regulator	Activated																
ANXA9	-1.613	transmembrane receptor																	
ALOX5AP	-1.602	other	Inhibited		Activated	Inhibited	Inhibited												
CSGALNACT1	-1.596	enzyme																	
ABCG2	-1.593	transporter																Affected	
ALDH1L1	-1.589	enzyme																	
KNG1	-1.588	other																	
PLC81	-1.582	enzyme																	
TBX2	-1.569	transcription regulator																	
HOXD03	-1.562	other																	
SLC1	-1.526	other	Inhibited		Activated	Inhibited													
GUICY2C	-1.525	kinase																	
SSTR2	-1.505	G-protein coupled receptor	Inhibited		Inhibited	Inhibited	Activated		Inhibited	Inhibited								Inhibited	
TIMP1	-1.49	cysteine	Inhibited		Affected	Inhibited	Inhibited	Inhibited	Inhibited	Activated	Affected	Inhibited							
ADORA1	-1.482	G-protein coupled receptor	Inhibited		Activated	Inhibited	Inhibited												
COL3A1	-1.473	other	Affected																
Defb1	-1.467	other																	
SDK1	-1.464	other																	
FZD8	-1.402	other																	
SPH1	-1.397	cysteine																	

FST	-1.292 other	Inhibited		Affected	Inhibited						
TACR1	-1.281 G-protein coupled receptor		Inhibited	Inhibited		Inhibited	Activated			Inhibited	
SLC16A1	-1.247 transporter					Inhibited				Inhibited	
DIXDC1	-1.246 other		Activated	Affected	Inhibited					Inhibited	
H19	-1.237 other					Inhibited				Inhibited	
SLT2	-1.235 other					Inhibited				Inhibited	
LDHB	-1.214 enzyme						Inhibited			Inhibited	
CHAC1	-1.213 enzyme	Inhibited									
Cyp2d9 (includes others)	-1.204 other							Affected			Inhibited
ANXA8/ANXA8L1	-1.203 other					Inhibited					
CDH2	-1.2 other	Inhibited	Affected	Activated	Inhibited						
STAP1	-1.199 other	Inhibited									
CDHR2	-1.185 other					Activated					
SLCO2A1	-1.171 transporter	Inhibited									
CXCL14	-1.15 cytokine	Inhibited									
FBLN2	-1.149 other	Inhibited				Inhibited				Activated	Inhibited
FAM110B	-1.141 other					Affected					
THPO	-1.138 cytokine	Inhibited	Inhibited			Affected					
GPR1	-1.136 other										
DDC	-1.133 enzyme								Activated	Inhibited	Affected
IL4R	-1.132 transmembrane receptor	Inhibited	Activated	Inhibited	Inhibited				Affected		
HTR2B	-1.128 G-protein coupled receptor					Affected			Inhibited	Affected	Inhibited
DEPTOR	-1.118 other					Activated					Affected
PSAT1	-1.116 enzyme										Inhibited
GRK5	-1.115 kinase					Inhibited	Inhibited				
NR4A1	-1.11 ligand-dependent nuclear receptor	Inhibited		Inhibited	Inhibited	Inhibited				Inhibited	Inhibited
SPARC	-1.108 other	Activated	Activated	Activated	Inhibited		Affected	Inhibited		Activated	Inhibited
CD2	-1.104 transcription regulator	Inhibited	Inhibited	Inhibited	Inhibited			Inhibited	Inhibited	Inhibited	
CRYAB	-1.1 other	Inhibited		Activated	Activated				Affected		Activated
POLJ2AF1	-1.099 transcription regulator									Affected	
IGF1	-1.099 growth factor	Inhibited	Activated	Inhibited	Activated			Inhibited		Inhibited	Inhibited
FBN2	-1.095 other	Inhibited				Activated					
Ccr9	-1.091 cytokine	Inhibited				Inhibited					
FAM19B8	-1.078 other					Activated					
Tcf7	-1.059 transcription regulator	Activated								Activated	Inhibited
SLC7A5	-1.044 transporter		Activated			Inhibited	Inhibited				Inhibited
CDP	-1.032 enzyme										Activated
APLR	-1.023 other										Inhibited
KCNJ16	-1.021 ion channel	Inhibited									
HMGC52	-1.007 enzyme	Activated									
ALPL	-1.001 phosphatase								Affected	Activated	
FBP1	1.014 phosphatase		Activated								
P2RX6	1.021 ion channel										
RG52	1.023 other	Inhibited				Inhibited					Affected
SLC22A1	1.07 transporter	Inhibited									
IRF6	1.06 other	Activated	Activated	Activated	Activated	Affected					Inhibited
GBP6	1.014 enzyme	Activated	Activated	Activated	Activated						
Osb1b	1.131 other	Affected	Activated								
CEACAM1	1.138 transporter	Activated	Activated	Activated	Activated	Affected	Affected	Affected			Affected
CXCL10	1.196 cytokine	Activated	Activated	Activated	Activated	Affected	Affected	Affected			
ADM	1.229 other	Activated	Activated	Activated	Activated	Inhibited	Inhibited	Affected			Activated
RSAD2	1.273 enzyme	Activated	Activated	Affected	Affected	Activated	Inhibited	Affected			
H2-Q5	1.403 other	Affected	Activated								
Mx1/Mx2	1.415 enzyme	Activated	Activated	Inhibited			Inhibited				Affected
OBSCN	1.416 enzyme										
AKR1B1	1.409 other										
AZGP1	1.517 transporter	Activated	Affected								
APOD	1.615 transporter										Affected
AGRTR1	1.689 G-protein coupled receptor	Inhibited	Inhibited	Inhibited	Inhibited		Activated	Affected			
RNASE1	1.787 enzyme										
Pbsn	1.976 transporter										Activated
MSMB	2.276 other										
STC2	2.391 other					Affected					

Supplemental Table S5. List of primers for qRT-PCR

Species	Gene	qRT-PCR primers	Sequence
mouse	Ptgs2 (prostaglandin-endoperoxide synthase 2)	Forward primer	CAAGACAGATCATAAGCGAGGA
		Reverse primer	GGCGCAGTTATGTTGTCTGT
mouse	Plau (plasminogen activator, urokinase)	Forward primer	GCCCCACTACTATGGCTCTG
		Reverse primer	ACAGATAAGCGGTCCAG
mouse	Angptl4 (angiopoietin-like 4)	Forward primer	AAGATGACCCAGCTCATTGG
		Reverse primer	GGAAAAGTCCACTGTGCCTC
mouse	Gpadh (glyceraldehyde-3-phosphate dehydrogenase)	Forward primer	AGGTCGGTGTGAAACGGATTG
		Reverse primer	TGTAGACCATGTAGTTGAGGTCA